
Department of
MECHANICAL ENGINEERING



SPARK

NEWSLETTER



Learn Beyond

KPR Institute of
Engineering and
Technology

(Autonomous, NAAC "A")

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About SPARK · Issue 2

SPARK is the quarterly newsletter of the Department of Mechanical Engineering, KPRIET. This issue covers October – December 2023.



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KPR INSTITUTE OF ENGINEERING AND TECHNOLOGY

KPRIET, established in 2009, is recognized for its high standards in engineering and technology. Supported by 250+ dedicated faculty and advanced facilities, KPRIET offers comprehensive programs across undergraduate, postgraduate, and research levels. Its commitment to global standards is evident in its NBA accreditation and partnerships with international institutions.

KPRIET is a dynamic environment for cultivating skilled professionals equipped for modern challenges.

VISION & MISSION

Vision:

To become a premier institute of academic excellence by imparting technical, intellectual and professional skills to students for meeting the diverse needs of industry, society, the nation and the world at large

Mission:

- Commitment to offer value-based education and enhancement of practical skills. Continuous
- assessment of teaching and learning processes through scholarly activities. Enriching research
- and innovation activities in collaboration with industry and institutes of repute.
- Ensuring the academic processes to uphold culture, ethics and social responsibilities.



DEPARTMENT OF MECHANICAL ENGINEERING

The Department of Mechanical Engineering, established in 2009, is committed to advancing technical education through a robust curriculum and research-driven approach. With over 400 students, the department offers undergraduate, postgraduate, and Ph.D. programs. Supported by 30 faculty members, 80% with Ph.D. degrees, and NBA accreditation since 2023, it provides students with essential industry skills and global perspectives.



Vision

To be recognized as a premier centre in the field of mechanical engineering education, research and development to meet the changing needs of industry and society.

Mission



Provide fundamental and skill-based education in mechanical engineering through innovative practices in teaching and learning



Establish centres of excellence in collaboration with reputed industries, professional bodies and research laboratories



Promote entrepreneurship with leadership qualities, ethics, and human values for the society at large



Events Organized

6 programmes organized by the Department during October – December 2023

Inauguration of the Institute of Indian Foundrymen (IIF) Students' Chapter

06 October 2023 | Chapter Inauguration · Sangam Hall · Chief Guest: Dr. V. S. Saravanan, Junior Vice President, Indoshell Cast Pvt. Ltd., Coimbatore



Event Brochure

The department inaugurated the Institute of Indian Foundrymen (IIF) Students' Chapter in the presence of Dr. V. S. Saravanan, Junior Vice President of Indoshell Cast Pvt. Ltd. and Technical Advisor to the IIF Coimbatore Chapter. Around 94 students attended, and the chapter's office bearers were announced. Forty-three second-year students enrolled as chapter members and gained valuable insights into casting technology – a timely complement to their Manufacturing Technology course. The chapter will connect students with the foundry industry through talks, visits and technical activities.



YANTRIK'23 – Workshop on 3D Printing and 3D Scanning

12 October 2023 | Workshop · YANTRIK'23 · Resource Person: Mr. P. Arunkumar, Assistant Professor, Mechanical Engineering



Event Brochure

As part of YANTRIK'23, the department demonstrated its 3D printing and 3D scanning systems to external participants. Mr. P. Arunkumar introduced additive manufacturing, classified the different AM processes and explained each in detail, before moving on to the 3D scanning workflow. Live demonstrations using Cura slicing software and Artec scanning software, followed by post-processing, showed participants the complete journey from a physical object or digital model to a finished printed part.



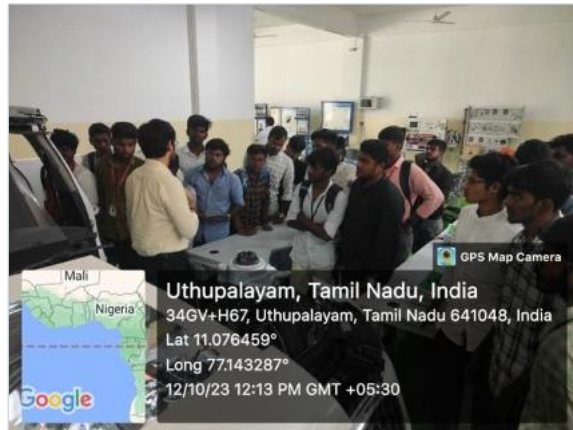
YANTRIK'23 – Workshop on Electric Vehicles

12 October 2023 | Workshop · YANTRIK'23 · Resource Person: Dr. M. Makesh Kumar, Associate Professor, Mechanical Engineering



Event Brochure

Approximately 100 external participants from other colleges joined the YANTRIK'23 workshop on electric vehicles. Dr. M. Makesh Kumar explained EV architecture, battery packs, motors, controllers and charging systems, and discussed how electrification is changing vehicle design. The highlight was hands-on training in which participants examined EV components and their integration first-hand. The workshop gave participants a practical understanding of a technology that is rapidly reshaping the automotive industry.



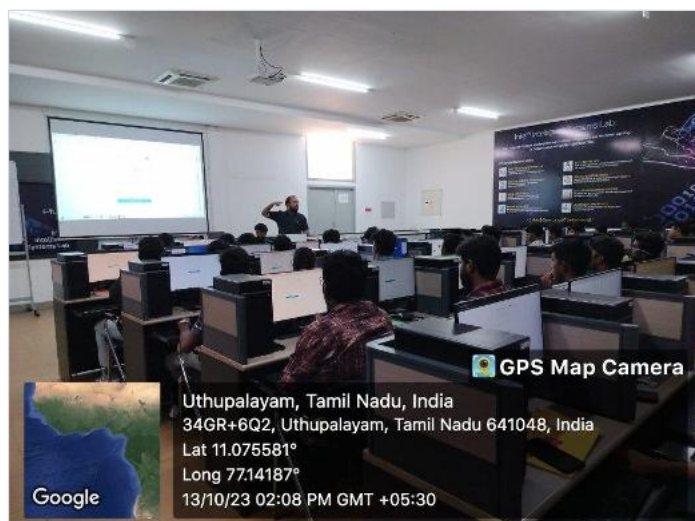
Two-Day Workshop on Geometric Dimensioning and Tolerancing (GD&T) using Fusion 360

13 – 14 October 2023 | Workshop · NMS Lab · Resource Persons: Dr. Prasath Vijayakumar and Mr. Abhinesh S, Autodesk India Pvt. Ltd. · Coordinators: Dr. N. Karthi and Dr. S. Ramesh Babu



Event Brochure

Students strengthened their engineering drawing skills in a two-day workshop on Geometric Dimensioning and Tolerancing using Autodesk Fusion 360. Experts from Autodesk India explained GD&T symbols, datums, feature control frames and tolerance zones, and showed how these communicate design intent clearly to manufacturing. Participants then applied GD&T to 3D models and drawings in Fusion 360, balancing theory with practical exercises and discussion of real applications. The workshop helped students produce drawings that meet industry standards.



Orientation Programme on SAE INDIA Activities

18 November 2023 | Orientation · Board Room, Dept. of ME · organised with the SAE Collegiate Club of KPRIET · Guest of Honour: Dr. K. Siva, Secretary, SAE INDIA Southern Section



Event Brochure

The department and the SAE Collegiate Club of KPRIET held an orientation on SAE INDIA activities for club members. After the welcome by Dr. K. Ravikumar and felicitation by Dr. S. Ramesh Babu, HoD, Dr. K. Siva, Secretary of SAE INDIA Southern Section and Chairman of the Coimbatore Chapter, spoke on the role of mechanical engineers in a global context. He outlined the year's events – the bicycle design competition, SAE BAJA 2024, Effi-cycle, e-vehicle design and fabrication and Tier-1 institute-level events – and encouraged members to take part and progress to zonal and national levels.



Industrial Guest Lecture on Analysing Fluid Flow Phenomena using CFD

18 November 2023 | Guest Lecture (Online, Google Meet) · II Mech Classroom · Resource Person: Mr. Bharathwaaj Ramani, Senior Design Engineer, Creative Synergies Consultancy India (P) Ltd., Bengaluru



Event Brochure

Second-year students studying Fluid Mechanics and Applications attended an online industrial guest lecture on computational fluid dynamics. Introduced by Dr. P. Manoj Kumar, Mr. Bharathwaaj Ramani of Creative Synergies Consultancy shared his experience with CFD and explained why it is essential for solving real fluid-flow and heat-transfer problems. He described the governing equations, the steps in a typical CFD workflow and the theory behind the solver, illustrated with an industrial example. The session gave students a strong appreciation of CFD as a tool they will use throughout their careers.



Faculty Publications

7 journal articles and 4 book chapters

Journal Publications

1. Naveen, R., Kumar, M., Ramesh, M., Abinaya, R. and Prasath, M.S. (2023) 'An investigation on effect of ultraviolet (UV) rays on mechanical properties of epoxy laminates', *Materials Today: Proceedings*.
2. Naveen, R., Kumar, M., Swarnalatha, A., Ezhilarasu, R., Prasath, M.S. and Ramesh, M. (2023) 'Corrosion Studies on Al6061 Alloy Based Hybrid Metal Matrix Composites', *International Journal of Vehicle Structures & Systems (IJVSS)*, 15(4), p. 932.
3. Kumar, P.M., Meena, R.S., Sivaramakrishnan, S., Sudhakar, M., Thilagham, K.T., Kumar, K.S. and Surakasi, R. (2024) 'Study on the photovoltaic panel using nano-CeO₂/Water-based Nanofluid', *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 18(8), pp. 6215–6224.
4. Selvaraj, G., Yessian, S., Ramalingam, S., Kumar, S.D., Gopal, G., Sharma, S., Kumar, A., Li, C. and Abbas, M. (2023) 'Investigation on topology-optimized compressor piston by metal additive manufacturing technique: Analytical and numeric computational modeling using finite element analysis in ANSYS', *Open Physics*, 21(1).
5. Balaji, D., Arulmurugan, B. and Bhuvaneswari, V. (2023) 'An overview of the additive manufacturing of bast fiber-reinforced composites and envisaging advancements using the patent landscape', *Polymers*, 15(22), p. 4435.
6. Noyon, M.A.R., Uddin, M.E., Dey, T.K., Jamal, M., Sivanantham, G. and Islam, R. (2024) 'Biodegradable composite from discarded hair keratin and graphene oxide with improved mechanical, thermal and barrier properties: an eco-friendly solution to waste materials', *Polymer International*, 73(3), pp. 230–237.
7. Raguramsingh, M., Suresh, M., Arivazhagan, S. and Ganapathy, T. (2023) 'Optimization of FSW parameters on bio-inspired jigsaw suture patterns to improve the tensile strength of dissimilar thermoplastics', *Materials Research Express*, 10(10), p. 105303.

Book Chapters

1. Murugesan, K., Vaithialingam, P., Raj, R.J.R. and Thangavel, S.K. (2023) 'Evaluation of mechanical performance of additive manufactured PA6GF30 alloy', in *AIP Conference Proceedings*. AIP Publishing LLC, Vol. 2912, No. 1, p. 020012.
2. Amarnath, V., Karthi, N., Kumar, Y., Akash, S. and Rajeshkumar, L. (2023) 'Analysis of brake performance of an all-terrain vehicles by simulation and experimental techniques', in *AIP Conference Proceedings*. AIP Publishing LLC, Vol. 2901, No. 1, p. 100034.
3. Amarnath, V., Vigneshkumar, N., Kumar, Y., Akash, S. and Rajeshkumar, L. (2023) 'Performance analysis of a single slope forced convection solar dryer', in *AIP Conference Proceedings*. AIP Publishing LLC, Vol. 2901, No. 1, p. 100033.
4. Gokulkumar, S., Kannan, T., Karthi, N., Sathish, S., Prabhu, L., Aravindh, M. and Alex, J. (2023) 'Development and Characterization of Glycine Max Seed Powder Blended with Unidirectional Agave Fourcroydes Reinforced Epoxy Nanocomposite', in *International Symposium on Lightweight and Sustainable Polymeric Materials*. Singapore: Springer Nature Singapore, pp. 159–172.

Student Achievements

Our students bring home prizes, medals and trophies



Won the Special Category Award in “Innovate for Impact” Design Ideation @ Kalam’23



Won awards in Line Follower & Full Throttle @ INNOVATEX 2.0, Presidency University



Won awards @ Techfest, IIT Bombay



Won awards @ TECHNICHE'23, IIT Guwahati



Won awards in Amphibot @ CONSCIENTIA'23, Indian Institute of Space Science and Technology



Won awards @ INVENTE'23, SSN College of Engineering, Chennai

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