
Department of
MECHANICAL ENGINEERING



SPARK

NEWSLETTER



Learn Beyond

KPR Institute of
Engineering and
Technology

(Autonomous, NAAC "A")

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About SPARK · Issue 1

SPARK is the quarterly newsletter of the Department of Mechanical Engineering, KPRIET. This issue covers July – September 2025.



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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

7 programmes organized by the Department during July – September 2025

Hands-on Training in Robotic Welding

08 – 24 July 2025 | Academia–Industry Internship · Centre for Robotic Welding & NDT · Resource Person: Mr. S. Ramanathan, Technical Product Manager, Kavin Inc., Coimbatore · Coordinator: Dr. B. Arulmurugan



Event Brochure

The department opened the academic year by hosting an Academia–Industry Internship on Robotic Welding, jointly run with Kavin Inc., Coimbatore. Seven students from Paavai Engineering College, Namakkal spent more than two weeks in the Centre for Robotic Welding & NDT learning to program welding robots, optimise process parameters and follow industrial safety practice. Working directly on production-grade equipment, the interns troubleshoot real weld defects and saw how automation is applied on modern shop floors. The programme strengthened the department's growing role as a regional training hub for advanced manufacturing and left the participants noticeably more industry-ready.



The Placement Blueprint: GD and Interview Readiness

14 August 2025 | Workshop · Veena Hall · Resource Person: Mr. Sathish Kumar Ramasubbu, Head – Soft Skills, Raise Smart Learn Solutions, Coimbatore · Convenor: Dr. M. Makeshkumar



Event Brochure

With the placement season approaching, final-year students attended “The Placement Blueprint”, a focused session on group discussions and personal interviews. Mr. Sathish Kumar Ramasubbu explained what recruiters look for in a GD – clarity of thought, leadership, teamwork and structured problem-solving – and walked through interview etiquette, body language and the mistakes candidates most often make. The highlight was a series of live mock GDs and interviews in which students took the hot seat and received on-the-spot feedback. Participants left with sharper speaking skills, greater confidence and a practical checklist for their upcoming recruitment drives.



180-Hour Skill Development Course on Robotic Welding & Additive Manufacturing

08 September – 14 October 2025 | Certification Course · COE – Robotic Welding & NDT · Resource Person: Mr. S. Ramanathan, Kavin Inc. · Convenor: Dr. B. Arulmurugan

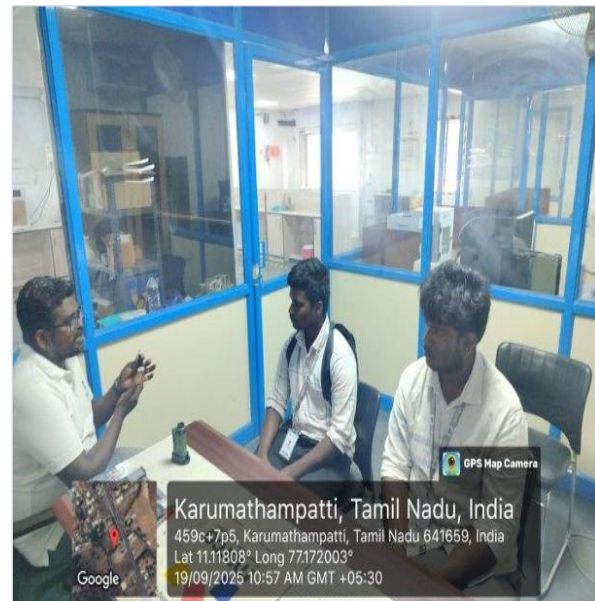
Seven students from KSR College of Technology completed an intensive 180-hour skill development course on Robotic Welding and Additive Manufacturing at the KPRIET Centre for Robotic Welding & NDT. The curriculum spanned CAD modelling, GD&T, ANSYS Workbench, online and offline robot programming with ABB RobotStudio, Wire Arc Additive Manufacturing, NDT, FDM printing and PLC programming. Classroom sessions were reinforced with industrial training and site visits to Kavin Inc., Kongu Engineers, Cosmic NDT and A Plus NDT, Coimbatore. Beyond building job-ready skills, the programme generated ₹1.4 lakh in training consultancy revenue for the department.



Upskilling Week

15 – 20 September 2025 | VAC / Training Programme (Hybrid) · Machine Shop and Partner Industries · Coordinator: Dr. S. Gokulkumar

During Upskilling Week, second-year students stepped out of the classroom and into the machine shop and partner industries around Coimbatore. Small groups observed real production lines, interacted with shop-floor engineers and practised fundamental machining operations under supervision. The visits gave students a first-hand view of how the processes they study – turning, milling, inspection and assembly – are planned and controlled in industry, and highlighted the importance of quality, safety and teamwork. The week closed with certificate distribution to participants, who returned with a clearer picture of the skills employers expect from mechanical engineers.



Upskilling – CNC Programming and Operation

15 – 20 September 2025 | VAC / Training Programme · KPR Knowledge Campus · Resource Person: Mr. K. Selvaraj, Managing Director, Hi-Tech CNC Automation · Coordinator: Dr. M. Makesh Kumar



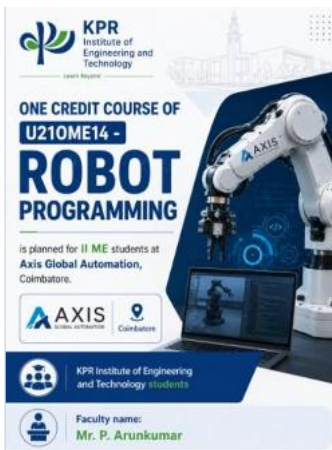
Event Brochure

As part of Upskilling Week, second-year students took a deep dive into CNC programming and operation under the guidance of Mr. K. Selvaraj of Hi-Tech CNC Automation. Students learned machine components, tooling and safety, wrote part programs using G- and M-codes, set work and tool offsets, and simulated toolpaths before cutting metal. They also practised debugging programs mid-cycle and moving a part from CAM software to the machine floor. By the end of the week, participants could interpret drawings for CNC work, develop simple programs and operate machines under supervision – a strong foundation for internships in precision manufacturing.



One Credit Course: U21OME14 – Robot Programming

18 September 2025 | One Credit Course · Axis Global Automation, Coimbatore · Coordinator: Mr. P. Arunkumar



Event Brochure

Nineteen second-year students travelled to Axis Global Automation, Coimbatore for the industry-oriented one credit course on Robot Programming. Working alongside automation engineers, students were introduced to industrial robot architecture, teach-pendant programming, coordinate frames and simulation before running their own programs on live robotic cells. The industrial setting made concepts such as path planning, end-effector selection and safety interlocks tangible. Students completed the course able to program, simulate and operate industrial robots for automation tasks, adding a valuable, employable skill set in robotics and smart manufacturing.



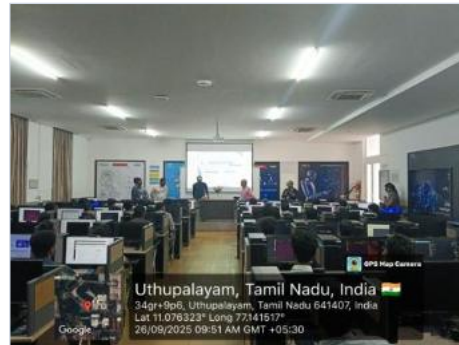
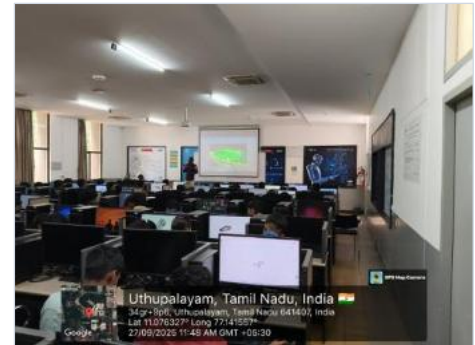
Two-Day Workshop on OpenFOAM Essentials: A Journey into Computational Fluid Dynamics

26 – 27 September 2025 | Workshop · NMS Lab · Resource Person: Mr. P. Balamurugan, CFD Engineer, Einnel Technologies, Chennai · Convenor: Dr. S. Dharani Kumar · Co-convenor: Dr. N. Mathan Kumar



Event Brochure

Fifty-eight participants from colleges across the region attended a two-day hands-on workshop on OpenFOAM, the open-source CFD toolkit. Mr. P. Balamurugan of Einnel Technologies guided them from installation and geometry creation through mesh generation, solver selection and boundary conditions, to simulating real-world flow and heat-transfer problems. Post-processing and visualisation sessions showed how to turn raw results into engineering insight. Participants gained practical experience with an industry-relevant, licence-free simulation tool and left better equipped to apply CFD to their academic projects and research.



Faculty Publications

10 journal articles and 5 book chapters

Journal Publications

1. Silambarasan, B., Sivanantham, G., Khan, T. and Sebaey, T.A. (2025) 'Optimisation of coconut shell particles reinforced Al-7075 aluminum composites with B4C and ZrO2 using CRITIC-EDAS for tribological performance', *Canadian Metallurgical Quarterly*. Available at: <https://doi.org/10.1080/00084433.2025.2518350>.
2. Muthukumar, N., Arulmurugan, B., Sureshkumar, R. and Bharathikanna, R. (2025) 'Evaluation of microstructure and mechanical properties of Superalloy 59 and 904L dissimilar welds using hot wire turbo TIG', *Archives of Metallurgy and Materials*, 70(2), pp. 803–817.
3. Ajithkumar, S., Arulmurugan, B., Manikandan, M. and Sathishkumar, M. (2025) 'Role of shielding gas in tailoring microstructure and anisotropy in wire arc additive manufactured Inconel 686', *Scientific Reports*, 15. Available at: <https://doi.org/10.1038/s41598-025-08197-7>.
4. Arulmurugan, B., Manikandan, M. and Kannan, T. (2025) 'Evaluation of metallurgical and mechanical properties in dissimilar welding of Monel 400 and Hastelloy C-2000 using single and double pulse gas metal arc welding techniques', *Journal of Adhesion Science and Technology*. Available at: <https://doi.org/10.1080/01694243.2025.2522185>.
5. Balasubramani, T., Mathan Kumar, N., Ronald Aseer, J. and Sivaram, N.M. (2025) 'Additive manufacturing of Ti-6Al-4V alloys: fabrication techniques and material properties – a review', *Transactions of the Indian Institute of Metals*, 78, p. 200. Available at: <https://doi.org/10.1007/s12666-025-03625-8>.
6. Karunanidhi, K., Manoharan, M. and Sivanantham, G. (2025) 'Valorization of agricultural waste in jute–PLA biocomposites: performance analysis of pistachio shell, tea leaf, and quail eggshell fillers', *Journal of Material Cycles and Waste Management*. Available at: <https://doi.org/10.1007/s10163-025-02361-x>.
7. Makeshkumar, M., Sasi Kumar, M., Felix Sahayaraj, A., Gokulkumar, S. and Jenish, I. (2025) 'A review on the effect of fiber treatment and fillers on mechanical properties of kenaf fiber-reinforced composites', *International Polymer Processing*. Available at: <https://doi.org/10.1515/ipp-2025-0006>.
8. Suyambulingam, I., Sivanantham, G., Divakaran, D., Ayilmis, N., Suganya Priyadharshini, G., Senthamarai Kannan, P. and Munusamy, Y. (2025) 'Banana peel waste as a source of cellulosic filler: isolation, characterization, and its potential as a green reinforcement in polymer composites', *Journal of Material Cycles and Waste Management*. Available at: <https://doi.org/10.1007/s10163-025-02374-6>.
9. Silambarasan, B., Janakiraman, S., Balavadeivel, R. and Sivanantham, G. (2025) 'Nano-reinforcement and synthesis of Al 8090-based hybrid composites with B4C and coconut shell charcoal for enhanced tribological performance', *Journal of Environmental Nanotechnology*. Available at: <https://doi.org/10.13074/jent.2025.09.2531602>.
10. Sathesh Babu, M., Saravanan, K., Vivek, U. and Dinesh, S.N. (2025) 'Comparative analysis of nano-CPH reinforced brake pad composites: mechanical, tribological and morphological investigations', *Journal of Environmental Nanotechnology*. Available at: <https://doi.org/10.13074/jent.2025.09.2531692>.

Book Chapters

1. Dharani Kumar, S., Manoj Mohan Prasath, V., Ganesh Kumar, S., Daniel Das, A. and Balasubramanian, A. (2025) 'The influence of dynamic loading on composites for automobile applications', in *Sustainable Composites for Automotive Engineering*. Woodhead Publishing Series in Composites Science and Engineering. Cambridge: Woodhead Publishing.
2. Dharani Kumar, S., Ramalingam, S.K., Manoj Mohan Prasath, V., Suresh Balaji, R., Loganathan, P. and Naveen Kumar, A. (2025) 'A crashworthiness study of composites for automobiles', in *Sustainable Composites for Automotive Engineering*. Woodhead Publishing Series in Composites Science and Engineering. Cambridge: Woodhead Publishing.
3. Sasi Kumar, M., Makeshkumar, M., Sathish, S. and Venkatesh, N. (2025) 'The role of the matrix in automobile composites – studies on recent advancements', in *Sustainable Composites for Automotive Engineering*. Woodhead Publishing Series in Composites Science and Engineering. Cambridge: Woodhead Publishing.

4. Sasi Kumar, M., Makesh Kumar, M., Sathish, S. and Venkatesh, N. (2025) 'Surface coating influence on the fiber reinforcement for automobile composites', in *Sustainable Composites for Automotive Engineering*. Woodhead Publishing Series in Composites Science and Engineering. Cambridge: Woodhead Publishing.
5. Ajithkumar, S., Arulmurugan, B., Sivalingam, S., Rajeshkumar, L. and Ramesh, M. (2025) 'Recycling aspects of eco-friendly natural fibers and polymers for the sustainable environment', in *Eco-Friendly Fiber Reinforced Polymer Composite Materials*. Woodhead Publishing Series in Composites Science and Engineering. Cambridge: Woodhead Publishing. Available at: <https://doi.org/10.1016/B978-0-443-32796-4.00008-5>.

Student Achievements

Our students bring home prizes, medals and trophies



Akash G & Gowrisankar P (Team Uvira)

Secured 2nd place in 8 kg Robo War @ RoboFest 1.0, SRM Institute of Science and Technology, Kattankulathur



Akash G

Secured 3rd place in OBS Race @ RoboFest 1.0, SRM Institute of Science and Technology, Kattankulathur



Dhanush Kumar S

Secured 1st place @ Invente'25, SSN College of Engineering, Chennai



Akash G & Team

Secured 2nd place in Robo Wars (Robo Sumo) @ Invente'25, SSN College of Engineering, Chennai



Tom N (Nyamusoro Tom D)

Secured 1st place in Drone Racing Competition @ ENGINEER'25, National Institute of Technology Karnataka, Surathkal



Maro S G & KPRIET Football (Men) Team

Secured 1st place in Anna University Zone IX Football Tournament 2025-26 @ KPRIET, Coimbatore



Hariharan B

Secured 3rd place in 10,000 m (Boys U-20) @ 39th Tamil Nadu Inter-District Junior Athletic Championship, Tamil Nadu Sports University, Vandalur



Rejoice Timire, Dambamuromo Tavonga I & KPRIET Chess Team

Won the team trophy @ Anna University Zone IX Chess Tournament, Suguna College of Engineering, Coimbatore



Rejoice Timire

Secured Runner-up position @ KPRIET Chess Tournament '25, KPRIET, Coimbatore

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