



B. N. M. Institute of Technology

An Autonomous Institution under VTU.

27th Cross, 12th Main, Banashankari 2nd Stage, Bengaluru 560 070.



In association with



MathWorks®



is organizing a Two Day National Hackathon



Explore, innovate and
prototype your ideas using
MATLAB® and Simulink®

15th and 16th October 2026

THEME TRACKS

THEME 1:
Sustainable Mobility

THEME 2:
Smart Krishi

THEME 3:
Smart City 2030

	5th Sep. '26 11:59 PM	9th to 18th Sep. '26	28th Sep. '26	5th Oct. '26	15th & 16th Oct. '26
	Last date for Registration	Industry interaction sessions	Last date for Online submission (PPT+3 minute video)	Announcement of Short listed teams for final round	Final Round BNMIT

Registration open to all undergraduate (UG) and postgraduate (PG) students of all branches and disciplines

Scan for Registration & Payment



The registration fee is for the administrative cost for organizing the event

Scan for more details about themes



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Venue:

BNM Institute of Technology

27th Cross, 12th Main, Banashankari 2nd Stage
Bengaluru - 560070

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PRIZES

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Guidelines for Participants

1. About Eco-Innovate 2026

BNM Institute of Technology invites undergraduate (UG) and postgraduate (PG) students, across all branches and disciplines to participate in Eco-Innovate 2026, a two-day hackathon that challenges teams to design technology-driven solutions for sustainable cities, clean mobility, and smart agriculture. Participants will work in small teams to research, prototype, and pitch solutions aligned with one of three official themes, guided by mentors from academia and industry.

Explore, innovate and prototype your ideas using MATLAB® and Simulink®

1.1 Eligibility

- Open to all undergraduate (UG) and postgraduate (PG) students, across all branches and disciplines.
- Teams must have a minimum of 2 and a maximum of 3 members.
- Inter-college and inter-disciplinary teams are welcome and encouraged.
- Each participant may be part of only one team for the competition.

2. Registration & Important Dates

Teams must register online before 5 September 2026, 11:59 PM. All communication regarding shortlisting, submissions, and event logistics will be sent to the email address provided at registration.

Milestone	Date
Last date for Registration	5 September 2026, 11:59 PM
Industry interaction sessions	9–18 September 2026
Last date for online submission (PPT+3 Min. video)	28 September 2026
Announcement of Short listed teams for final round	5 October 2026
Final round at BNMIT Campus, Bengaluru	15–16 October 2026

Registration Fee

Category	Fee
IEEE Member	Rs. 350/- + 18% GST
Non-IEEE Member	Rs. 450/- + 18% GST

The fee given above is per participant.

3. Event Format

Round 1 — Online Evaluation

Registered teams must submit a presentation (PPT) and a 3-minute explainer video describing their proposed idea through the official online submission platform. Submission-platform details will be shared directly with registered participants.

All registered Team members for Round-1 and not selected for Round-2 will get the participation certificate.

Round 2 — The Two-Day Finale

Teams shortlisted from Round 1 will build and present their idea or working prototype in person at the BNMIT campus over two days of development, mentoring, and final presentations.

All the selected Team members for Round-2 will receive Final Round Participation certificate.

4. Hackathon Themes

Each team must choose exactly one of the following three themes for their project. Solutions should be original, technically feasible within the hackathon timeframe, and clearly aligned with the theme's objectives.

4.1 Theme 1 — Sustainable Mobility

Problem Statement: Design an Intelligent Electric Vehicle Ecosystem for Sustainable Mobility Theme

Accelerating Sustainable Transportation through Intelligent Electric Vehicle Technologies

Design and develop an **Integrated Intelligent Electric Vehicle Ecosystem** to improve the efficiency, reliability, sustainability, and user experience of electric mobility.

The proposed solution should integrate any FOUR of the following functional areas into a unified platform.

Functional Requirements

1. Smart Charging Management

Develop an intelligent charging scheduler that:

- Optimizes charging based on dynamic electricity tariffs.
- Considers battery State of Charge (SoC) and State of Health (SoH).
- Balances charging demand to reduce grid stress.
- Incorporates user preferences and travel schedules.
- Supports home, workplace, and public charging scenarios.

2. Battery Management System (BMS) Intelligence

Develop an AI-enabled battery monitoring system capable of:

- Estimating SoC and SoH.
- Predicting battery degradation and remaining useful life.
- Detecting abnormal operating conditions.

- Optimizing charging and discharging cycles.
- Extending battery lifespan while ensuring safety.

3. Predictive Maintenance

Create an AI-based predictive maintenance solution that:

- Monitors EV components using IoT sensor data.
- Detects early signs of faults.
- Predicts component failures.
- Recommends preventive maintenance.
- Minimizes vehicle downtime and maintenance costs.

4. Vehicle-to-Grid (V2G) Integration

Develop a secure V2G framework that:

- Enables parked EVs to supply power back to the grid during peak demand.
- Protects battery health and user mobility requirements.
- Maximizes economic benefits for EV owners.
- Supports smart grid stability and renewable energy integration.

5. Renewable Energy Integration

Develop an energy management system that coordinates:

- Solar PV generation.
- Battery Energy Storage Systems (BESS).
- EV charging demand.
- Utility grid power.

The objective is to minimize:

- Energy cost.
- Peak demand.
- Carbon emissions.

6. Digital Twin of an EV Ecosystem

Develop a Digital Twin capable of simulating:

- Vehicle performance.
- Charging station utilization.
- Battery degradation.
- Traffic-driven charging demand.
- Renewable energy availability.
- Grid interaction.

The Digital Twin should enable "what-if" scenario analysis and support future infrastructure planning.

7. Smart Fleet Management

For commercial EV fleets:

- Optimize route planning.
- Predict charging requirements.

- Minimize idle time.
- Reduce operational costs.
- Improve fleet utilization.

8. Charging Infrastructure Analytics

Develop intelligent analytics to:

- Predict charging demand.
 - Identify optimal locations for new charging stations.
 - Estimate utilization.
 - Recommend infrastructure expansion.
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4.2 Theme 2 — Smart City 2030

Design and develop an **Integrated Smart City Management Platform** to monitor, simulate, predict, and optimize multiple urban services in real time.

The platform should provide city administrators with actionable insights for improving operational efficiency, sustainability, public safety, and quality of life while reducing operational costs and environmental impact.

Objectives

Develop a scalable solution capable of integrating and optimizing any FOUR of the following smart city domains:

1. *Intelligent Traffic and Mobility Management*

- Optimize traffic signal timings using real-time traffic density.
- Predict congestion and recommend alternate routes.
- Prioritize emergency vehicles.
- Improve public transportation efficiency.

2. *Smart Energy Management*

- Monitor electricity consumption across city zones.
- Integrate renewable energy sources.
- Predict peak demand.
- Optimize energy distribution and storage.

3. *Smart Water Management*

- Detect pipeline leakages.
- Monitor water quality and reservoir levels.
- Predict future water demand.
- Optimize water distribution.

4. *Intelligent Waste Management*

- Predict waste generation patterns.
- Optimize waste collection routes.
- Monitor smart bins using IoT sensors.
- Improve recycling efficiency.

5. *Environmental Monitoring*

- Monitor air quality, noise levels, and weather conditions.
- Predict pollution hotspots.
- Recommend mitigation strategies.

6. *Public Safety and Emergency Response*

- Detect abnormal events using AI.
- Predict accident-prone locations.
- Optimize emergency vehicle routing.
- Provide disaster response simulations.

7. *Smart Parking*

- Detect vacant parking spaces.
- Predict parking demand.
- Guide drivers using intelligent routing.
- Reduce vehicle idle time.

8. *Citizen Engagement*

- Develop a citizen dashboard or mobile interface.
- Report civic issues.
- Provide alerts and recommendations.
- Display city performance indicators.
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4.3 Theme 3 — Smart Krishi

Design and develop an **Integrated Smart Agriculture and Precision Farming Platform** to improve agricultural productivity, resource efficiency, sustainability, and farm profitability.

The proposed solution should integrate any FOUR of the following functional modules into a unified intelligent farming ecosystem.

Functional Requirements

1. Precision Irrigation and Water Management

Develop a smart irrigation system that:

- Monitors soil moisture, weather forecasts, and crop water requirements.
- Optimizes irrigation schedules using AI-based decision-making.
- Minimizes water wastage and energy consumption.
- Supports automated irrigation control.
- Predicts future irrigation demand.

2. Crop Health Monitoring and Disease Detection

Develop an AI-powered crop monitoring system capable of:

- Detecting nutrient deficiencies, diseases, and pest infestations using image processing.
- Monitoring crop growth stages.
- Estimating crop stress using sensor or drone imagery.
- Recommending appropriate corrective actions.
- Providing early warning alerts to farmers.

3. Smart Fertilizer and Nutrient Management

Develop an intelligent recommendation engine that:

- Analyses soil nutrient levels.
- Predicts fertilizer requirements.
- Optimizes fertilizer application.
- Reduces excessive chemical usage.
- Improves crop productivity while protecting the environment.

4. Weather-Aware Farm Decision Support

Develop a predictive analytics system that:

- Integrates weather forecasts with field data.
- Predicts crop yield and production risks.
- Provides recommendations for sowing, irrigation, fertilization, and harvesting.
- Generates climate-resilient farming strategies.

5. AI-Based Pest Prediction

Develop a predictive system that:

- Monitors environmental conditions.
- Predicts pest outbreaks before they occur.
- Identifies vulnerable crop regions.
- Recommends preventive measures.
- Minimizes crop losses.

6. Digital Twin of a Smart Farm

Develop a Digital Twin capable of simulating:

- Crop growth under varying environmental conditions.
- Irrigation scenarios.
- Soil moisture dynamics.
- Fertilizer application strategies.
- Resource utilization.
- Yield prediction.

The Digital Twin should support "what-if" scenario analysis and assist in precision farm planning.

7. Smart Greenhouse Management

Develop an intelligent greenhouse controller that:

- Monitors temperature, humidity, light intensity, and CO₂ levels.
- Optimizes environmental conditions.
- Reduces energy consumption.
- Maximizes crop yield.

8. Agricultural Robotics and Automation

Develop intelligent algorithms for:

- Autonomous crop monitoring.
- Precision spraying.
- Weed detection.
- Automated harvesting.
- Path planning for agricultural robots.

9. Supply Chain and Post-Harvest Analytics

Develop a platform that:

- Predicts storage requirements.
- Minimizes post-harvest losses.
- Optimizes transportation routes.
- Forecasts market demand and pricing.
- Improves farm-to-market efficiency.

5. General Hackathon Guidelines

5.1 Team & Conduct Rules

- Each team must confirm its final member list at registration; changes after the Round 1 deadline will not be permitted.
- One idea, one theme per team — teams may not submit to multiple themes.
- All team members are expected to be present for the full duration of Round 2 at the BNMIT campus.
- Participants must treat mentors, judges, organizers, and fellow participants with courtesy and professionalism at all times.
- Any form of harassment, discrimination, or disruptive behaviour will result in immediate disqualification.

5.2 Originality, IP & Use of AI Tools

- Submissions must be original work created during the hackathon period; pre-built products submitted as new work will be disqualified.
- Teams may use open-source libraries, public datasets, and AI coding assistants, but must clearly disclose all third-party tools and code used in their final submission.
- Plagiarism, or presenting another team's or an external party's work as one's own, will lead to disqualification.
- Intellectual property developed during the hackathon remains with the participating team; by entering, teams grant BNMIT a non-exclusive right to showcase the project for promotional and academic purposes.

5.3 Submission Guidelines

- Round 1: one PPT (max 15 slides) and one video (max 3 minutes), submitted in the formats specified on the registration platform, before the stated deadline. Ppt Template will be shared for the registered participants only at a later date.
- Round 2: A working prototype and/or clearly demonstrable proof of concept, along with a final presentation deck, submitted before the on-campus presentation slot.
- Late submissions will not be accepted under any circumstances; teams are advised to submit well ahead of the deadline to avoid last-minute technical issues.

5.4 Evaluation Criteria

- Innovation and originality of the proposed solution.
- Technical feasibility and depth of implementation.
- Relevance and impact with respect to the chosen theme.
- Sustainability, scalability, and real-world applicability.
- Quality of presentation and clarity of demonstration.

The decision of the judging panel will be final and binding on all matters related to evaluation and results.

5.5 Logistics & Code of Conduct

- Participants must bring their own laptops, chargers, and any project-specific hardware; power and Wi-Fi access will be provided on campus.

- Participants selected for Round-2 at BNMIT, Bangalore will have to make their own arrangements for travel and Accommodation.
- Breakfast, Lunch, snacks, coffee/Tea (2 times a day) will be provided to all the participants.
- BNMIT is not responsible for loss of or damage to personal devices or belongings.
- Participants must carry a valid college ID card for verification at the venue.
- Organizers reserve the right to disqualify any team that violates these guidelines or the spirit of fair competition.

6. Prizes for Winning Teams

Win Cash prizes, goodies and certificates.

7. Event Schedule

Date	Time	Activity
15 October 2026	8:00 AM – 6:00 PM	Hackathon – Day 1 (development & mentoring)
16 October 2026	8:00 AM – 6:00 PM	Hackathon – Day 2, final presentation of ideas/prototypes

8. Contact & Venue

Organizing Committee

- **Prof. S. L. Satheesh Kumar** — Ph: 9845357806 | Email: ecoinnovate2026@bnmit.in
- **Dr. Madhu S** — Ph: 9886496914 | Email: ecoinnovate2026@bnmit.in

Venue

BNMIT Campus, 27th Cross, 12th Main, Banashankari 2nd Stage, Bengaluru – 560070.