NITTTR BHOPAL

EEE-21/2024-2025
Electric Vehicle Technology
03-02-2025 to 07-02-2025
NITTTR Bhopal

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Rationale

Electric Vehicle (EV) technology represents a significant advancement in automotive innovation, driven by the need for sustainable transportation solutions to address environmental challenges. EVs reduce reliance on fossil fuels, thereby cutting greenhouse gas emissions and diminishing air pollution, which are critical for mitigating climate change and improving public health. Additionally, EVs offer superior energy efficiency compared to internal combustion engine vehicles, as they convert a higher percentage of electrical energy from the grid to power at the wheels. The development of EV technology also spurs economic growth by creating new industries and job opportunities in manufacturing, battery production, and renewable energy sectors. Furthermore, advances in battery technology, charging infrastructure, and smart grid integration enhance the practicality and appeal of EVs, making them a viable and increasingly popular choice for consumers worldwide.

Programme Outcomes

?Describe the basic components and working principle of electric vehicles
?Describe the basic components and working principles of electric motors in EVs.
?Explain the environmental and economic impacts of electric vehicles
?Demonstrate the basic diagnostic and maintenance procedures on electric vehicles.
?Compare different types of electric vehicle technologies
?Assess the advantages and limitations of various battery technologies
?Design a conceptual electric vehicle powertrain

Programme Content

Overview of both theoretical knowledge and practical skills necessary for a career in the rapidly evolving field of electric vehicle technology. Programme contents are Introduction to Electric Vehicles, Types of electric vehicles: BEVs, PHEVs, and FCEVs, Overview of the current market and future trends, Energy Storage Systems, Battery technologies, Battery management systems (BMS), Charging infrastructure, Powertrain and Vehicle Dynamics, Electric powertrain components, Vehicle dynamics, Control Systems and Automation, Communication protocols, Environmental and Economic Impact, Charging Infrastructure and Smart Grid Integration, Policy, Standards, and Regulations

Target Group

Faculty of Electrical and Mechanical Engineering & allied disciplines

Coordinator & Co-Faculty

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