

## **(072-E&E-01-03) E- MOBILITY**

### **Significance of the Program**

E-mobility is a rapidly evolving field, driven by advancements in technology, environmental concerns, and the desire to reduce dependence on fossil fuels. As technology continues to improve and infrastructure develops, e-mobility is likely to play an increasingly prominent role in the transportation sector. This program provides insights of the use of electric vehicles (EVs) and associated technologies and also gives knowledge on Modeling, Dynamics, Control of Electric Vehicles, Energy Storage and Conversion.

### **Career Options**

Pursuing M.Tech. program in E-Mobility, students can explore the following opportunities

- Design Engineer in automotive companies developing electric vehicles and integration of Electric Vehicle components.
- They can work on the design, testing, and improvement of energy storage systems for electric vehicles manufacturing industries.
- Research and development organizations working on Battery Management System (BMS) Engineer.
- In charging infrastructure companies and smart grids as Power Electronics Engineer to design and develop power converters.
- They can work for Policy and regulation planning in Government organizations.
- They can work in Education, training and Entrepreneur.

### **Program Objectives**

1. Understand basic concepts of electric vehicle components
2. Gain knowledge in design efficient and high-performance Electric Vehicle systems and integration of various components.
3. Explore the design of power electronic converters, electric drives, energy storage technologies and charging infrastructure.
4. Understand the regulatory standards and policies governing electric mobility.

### **Outcomes of the Program**

- Summarize the basic concepts of Electric Vehicle Technologies.
- Demonstrate in-depth knowledge of different battery chemistries, energy storage technologies, and their applications in electric mobility.

- Develop innovative solutions in the e-mobility domain.
- Apply knowledge on regulatory standards and policies governing electric mobility.

**Major Course Outline**

1. Electric Vehicle Technology
2. Design of Automotive Power Converters and Electric Motor Drives
3. Charging Infrastructure for Electric Vehicles
4. Automotive Embedded Systems
5. Batteries for Electric Vehicles
6. Techno-Socio-Economical aspects of Electric Vehicle