(071-E&E-01-02) EEE (SMART GRID AND ELECTRIC VEHICLES)

Significance of the Program

The world has seen a dramatic change in favour of environmentally friendly and sustainable modes of transportation in recent years. Electric vehicles (EVs) and associated technologies are in high demand as a result of this shift. With the help of smart grid technology, electric vehicles (EVs) can gain from reduced costs and environmental effects, increased accessibility and convenience, improved power system resilience and dependability, and the creation of new revenue streams and business models. More options and information for EV drives, improved utilisation of electricity resources particularly renewable energy sources, and support for EV integration as distributed resources or flexible loads, and participation in energy markets or grid services are all made possible by these technologies. Because of this, the field of smart grid and e-vehicle technology has become one that is both attractive and rapidly developing, providing a wealth of job prospects for those with the necessary expertise.

Career Options

The career prospects for e-vehicle technology are highly promising. Governments around the world are implementing stricter emissions regulations and offering incentives to promote the adoption of electric vehicles. Pursuing a professional course in B.Tech EEE specialization with Smart Grid and Electric Vehicles), students can explore the following opportunities:

They can work for start-ups in renewable energy, automakers, research institutes, smart grid technology, battery manufacturers, and charging infrastructure suppliers.

- Renewable Energy Sector- Solar PV Plants, Wind Power Plants, Biogas, Biomass Plants etc
- IT Industries and Automation Industries
- Electric Vehicles Sector
- Entrepreneurship – Self Employed New Ventures, Own Enterprise which can be in the field of Renewable and Electric Mobility.

Program Objectives

1. Imparting quality of education with a firm emphasis on fundamentals in order to cultivate proficient engineers who can effectively analyze and resolve issues pertaining to the

generation, transmission, distribution, control, and utilisation of electrical energy, while prioritizing safety and economic considerations.

2. Providing knowledge of the design, analysis, operation, planning and maintenance of interaction of electric vehicle systems with the smart grid.
3. Acquire intellectual leadership skills to communicate effectively to disseminate ideas, promote teamwork, and respond to the changing needs of the energy industry, science, society, and the environment.

Outcomes of the Program

1. Design, develop and implement solutions in teams for identified problems in the domain of electrical engineering and communicate the findings effectively.
2. Apply electrical engineering systems to explore the power conversion, battery management, smart grid and charging technology for electric vehicles.
3. Apply appropriate techniques and modern Engineering hardware and software tools in electric vehicle

Major Course Outline

1. Advanced mathematics for Electrical Engineers
2. Smart Grid Technologies
3. Electrical Vehicle Technology
4. Intelligence and Communication in smart grid
5. Power Electronic converters for Smart Grids and Electric Vehicles
6. Modelling and simulation of electric vehicle
7. EV Batteries and Charging Systems
8. Testing and Certification of Electric and Hybrid Vehicle etc.