Workshop Content of Smart and Solar Energy

Objective:

Learn and Build a project on Solar and Smart Energy using Embedded System in this course.

This includes practical exposure to solar energy production along with the real-life application of charging a battery. Students also learn the concepts of Smart energy and other industry trends like green energy, smart building, smart grid and energy harvesting technologies.

Course Content:

Session: 1

- What is Solar Energy:
- Solar Energy need and Application
- Solar Thermal
- Solar Electricity
- What are Smart Energy System ?
- Other Renewable Energy Technologies
- Appropriate Technology for the Developing World
- Economics of Renewable Energy

Session: 2

- How photovoltaic cells work
- Solar cell efficiency
- Factors affecting cell performance
- Solar panel specifications
- Photovoltaic System Components
- Testing   Solar Panel
- Harnessing Solar Energy for powering home appliances

Session: 3

- Basics of Electricity
- Power equations
- Basic electricity. Relationship of Watts, Volts and Amps.
- Ohm's Law
- Electrical circuits
- How batteries work
- How digital sensor works
- Detect an object with your digital sensor
- How to detect traffic density?

Session: 4

- Working of a Microcontroller
- Structure of a Microcontroller
- Development Board Schematic
- Explaining Various component on the Development Board.

Session: 5

- Programming - Embedded C Programming, IDE & Flashing
- Software installation
- Program for Smart Traffic Control System
- Flashing the Code onto the Microcontroller

Session: 6

- Connection and Assembling
- Troubleshooting
- Testing smart energy project

Session: 7

- Smart Traffic Control System
- Solar powered Led Street Light With Auto Intensity Control
- Design of Simple solar Charger Circuit for Mobile.
- Sun Tracking Solar Panel

Session: 8

- Competition and Certification distribution