Course Structure

Course Code : **SM7204**

Course Title : **Smart Grids for Energy Saving**

Credit Hours : **3**

Course Description

The course defines the various aspects in smart grid technology, including a technical overview of the architecture (including also renewable technologies and storage), networking, transmission and distribution. The course further examines the different deployment issues, statutory and regulatory requirements, demand shaping and energy management aspects.

Course Objectives

At the core of future smart grids is the transformation of the electrical energy supply chain from a centrally controlled grid to one that is more consumer-interactive with enormous potential for energy savings. The aim of the course is to describe the significance of smart grids and the use of information communication technologies to modernize the existing electrical network to deliver energy reliably and efficiently.

Course Topics

- Power system basic principle
- Smart generation
- Smart generation: resources and potential
- Key functions for smart grids
- Smart grid element and functionality
- Smart grid architectural design
- Renewable energy and storage
- Smart grid distribution
- Smart grid transmission
- Smart grid operation
- Energy saving policy
- Interoperability, standards and cyber security
- Intelligent energy efficiency systems
- Smart grid economics

References

- James Momoh, Smart Grid: Fundamentals of design and analysis, IEEE and Wiley press, 2012.
- Buchholz Bernd, Styczynski Zbigniew, Smart Grids-Fundamentals and technologies in electricity networks, Springer press, 2014.