

**KL University**  
**Department of Electronics & Computer Engineering**  
**M.Tech (wcsn) 2015-2017**

**Course Code** : 15-EM52G2  
**Course Title** : **Smart Grid Communication and Networking**  
**Course Structure** : 3-0-0

**SYLLABUS:**

**Unit-1**

**Communication networks in smart grid: an architectural view:** Introduction , Smart grid conceptual model , Smart grid communication infrastructures, Interoperability issues, Role of communication infrastructures in smart grid.**New models for networked control in smart grid:** Introduction, Information in today's power system management operations, Enhanced smart grid measuring functionalities, Demand-side management and demand response: the key to distribute cheap and green electrons

Unit-2

**Communications and access technologies for smart grid:** Introduction, Communications media, Power-line communication standards, Wireless standards, Networking solutions

**Machine-to-machine communications in smart grid:** Introduction, M2M communications technologies, M2M applications, M2M architectural standards bodies, M2M application in smart grid

Unit-3

**Networking technologies for wide-area measurement applications:** Introduction 205, Components of a wide-area measurement system, Communication networks for WAMS, WAMS applications, WAMS modelling and network simulations

**Wireless networks for smart grid applications:** Introduction, Smart grid application requirements, Network topologies, Deployment factors, Performance metrics and tradeoffs

Unit-4

**Wireless sensor networks for smart grid: research challenges and potential applications :** Introduction, WSN-based smart grid applications. **Sensor techniques and network protocols for smart grid:** Introduction, Sensors and sensing principles, Communication protocols for smart grid. **Potential methods for sensor and actuator networks for smart grid:** Introduction, Energy and information flow in smart grid, SANET in smart grid, Proposed mechanisms, Home energy-management system – case study of SANET in SG

Unit-5

**Cyber-attack impact analysis of smart grid:** Introduction, Background, Cyber-attack impact analysis framework, Case study.

**Text Books**

1. Smart Grid Communications and Networking By Ekram Hossain, Zhu Han and H. Vincent Poor , Cambridge University Press 2015

**Ref. books**

1) Communication and Networking in Smart Grids (Novel by Yang Xiao)  
Originally published: January 1, 2012. CRC Press.

2) Smart Grid Applications, Communications And Security ,\_ Wiley Publications