

Minutes of Meeting, Board of Studies (internal), 27.2.18

GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA

ELECTRICAL ENGINEERING DEPARTMENT

Minutes of Meeting Board of Studies (Internal)

Held on: 27th February, 2018

Venue: Committee Room

Ref. No. EE/ 200/A

Dt. 27/2/18

The following member were present:

1. Pf. Jaswinder Singh, Chairman *Jas*
2. Pf. Khushdeep Singh (On Leave)
3. Pf. Preetinder Singh *Preetinder SM*
4. Pf. Rupinderjit Singh *Rupinder Singh*
5. Dr. Kanwardeep Singh *Kanwar Singh*
6. Pf. Gagandeep Sjingh Sodhi *Gagandeep*
7. Dr. Navneet Singh Bhangu *Navneet*
8. Pf. Harmeet Singh Gill *Harmeet*
9. Dr. Arvind Dhingra *Arvind*

Special Invitee

Er. Satish Saini = *Saini*
Chairman, Smart Grid Technical Activities,
(SG TAC)- IEEE
Senior Projects & Program Manager, Hydro One Networks Inc.
Mississauga, Ontario, Canada.

Pf. Jaswinder Singh, Chairman, BoS welcomed the participants to the meeting and the following agenda points were discussed:-

1. The syllabus of the subject Smart Grids: Fundamentals & Technologies was placed before the board as it has to be added as an elective subject in 7th / 8th Semester of B.Tech (Electrical Engg) in 2017 Syllabus Scheme. The same was approved. (SUBJECT CODE : DEEE-17811)
2. The Environment Engg. Subject for 2017 Syllabus Scheme has to be taught to the students of 2017 batch B.Tech. (Electrical Engg) immediately after the completion of 2nd Semester. The syllabus for Environment Engg. is common to all branches and will be supplied by Civil Engineering department. The item was approved.
3. New codes and hours allotted for the subjects of 2017 Syllabus Scheme was discussed and placed before the board. The board approved the same.
4. Course outcomes of B.Tech (Electrical Engg) and M.Tech (Power Engg.) were reformulated and deliberated upon in the meeting. The board approved the same.

Jas
HOD(Electrical) &
Chairman. BoS

27/02/2018

DEEE-17811 SMART GRIDS - FUNDAMENTALS AND TECHNOLOGIES

Internal Marks : 40	L	T	P	C
External Marks : 60	3	1	0	4
Total Marks : 100				

COURSE OUTCOMES

After studying this course, the students will

- a. Understand fundamentals of smart grid.
- b. Become aware of resources for smart generation.
- c. Acquire knowledge about modern technologies for smart grids.
- d. Understand applications of smart meters.
- e. Compare smart grids technologies available world over.
- f. Analyze smart grids as regards to components and design.

CONTENTS

1. **ELECTRICAL NETWORKS OF THE FUTURE** (L-8)
The fundamentals of smart grids, the core elements of the smart grid vision, ambitious changes of the energy policies and the consequences for smart grid.
2. **SMART GENERATION: RESOURCES AND POTENTIALS** (L-10)
Latest trends and requirements for electricity generation, renewable energy sources: wind and sun, wind power plants, utilization of solar power for electricity generation, cogeneration of heat and power applying renewable energy sources: Bio Fuel power plants, geothermal power plant, Fuel cells, Electric energy storage systems, Enhanced flexibility requirements for controllable power plants
3. **MODERN TECHNOLOGIES AND THE SMART GRID CHALLENGES IN TRANSMISSION NETWORKS** (L-8)
Substations: the network nodes, Schemes and components of transmission substation, control and automation of power systems by digital technologies, transmission technologies, present challenges for transmission grids.
4. **STEPS OF SMART DISTRIBUTIONS** (L-8)
The relationship between smart grids and smart markets in distribution system, automation and remote control of local distribution network, flexibility by virtual power plants: Smart aggregation, smart metering and smart integration of the consumers, communication needs for smart distribution.
5. **SMART GRIDS WORLDWIDE** (L-8)
Smart grids for the world's largest power system, overview of smart grids projects, selected smart grid applications.

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BOOKS RECOMMENDED:

1. Buchholz, Bernd M., Styczynski, Zbigniew, *Smart grids fundamentals and technologies in electricity networks*, Springer.
2. Momoh Jame, *Smart grids fundamental of design and analysis*, John Wiley & Sons.
3. Janaka B. Ekanayake, Nick Jenkins, Kithsiri Liyanage, Jianzhong Wu, Akihiko Yokoyama, *Smart grids Technology and applications*, John Wiley & Sons.
4. Fereidoon P. Sioshansi, *Smart grids integrated renewable, distributed and efficient energy*, Elsevier.

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