جامعة الملك فهد للبترول والمعادن

King Fahd University of Petroleum & Minerals

POWER SYSTEM OPERATION AND MARKET ECONOMICS

Short course

February 14 - 18, 2016

جامعة الملك فهد للبترول والمعادن
King Fahd University of Petroleum & Minerals

POWER SYSTEM OPERATION AND MARKET ECONOMICS

Short Course
February 14-18, 2016

Course Description

This course provides a comprehensive introduction to the economics of the electric power system, including the economic theory, electricity market policies and regulation, and market-based planning. First, the basics of conventional power system operations will be covered, including economic dispatch, unit commitment, optimal power flow, and automatic generation control. Then, a detailed description of electricity markets will be provided. This includes, but is not limited to, the types of electricity markets, the roles of the different market participants (e.g. independent system operator, regulator, producers, and consumers), bidding strategies, perfect and imperfect markets, handling congestion, and ancillary services. International experiences of existing electricity markets in North America and Europe will be discussed. The emerging topics of integration of renewable energy generation and smart grid will be also covered. Furthermore, the prospects of power system operation in Saudi Arabia and its envisioned market details will be highlighted.

Course Topics

- Organization of electricity supply industry: Vertically-integrated utility vs. deregulated market
- Conventional operation of the power system: Economic dispatch, unit commitment, optimal power flow, and AGC
- Fundamentals of markets: Supply, demand, market equilibrium.
- Electricity markets: Bilateral trading, spot market, forward market, options, contract for difference, Settlement process
- Management of the transmission system
  - Decentralized vs. centralized trading
  - Nodal pricing
  - Financial vs. physical transmission rights
- Planning, investment, and regulation of transmission
- European Inter-connection, UK, NordPool, and ERCOT models
- Integration of renewable generation and smart grids
- Envisioned Electricity Market in Saudi Arabia

Who Should Attend

This course should be of great interest for engineers and professionals working in the planning, design, operation, and maintenance of the power grid.

Course Dates	**14-18 February 2016** **5-9 Jumada I 1437 H**
Duration	**5 Days (8:00 am — 3:30 pm)**
Language	**English**
Fees	**SR 8,000 (Before January 3rd)** **SR 8,500 (After January 3rd)**
Location	**Dhahran, Saudi Arabia**

Instruction Team

Dr. Goran Strbac, Imperial College London, UK. (Two Days)
Eng. Essam Al-Wafi, National Grid (One Day)
Dr. Ibrahim El-Amin, KFUPM (One Day)
Dr. Ali Al-Awami, KFUPM (One Day)

Biographies of External Instructors

Dr. Goran Strbac is a Professor of Electrical Energy Systems at Imperial College London. He led the development of novel advanced analysis approaches and methodologies in the area of energy system integration, smart grids, electricity market, economics of energy infrastructure reliability, that have been extensively used to inform industry, governments and regulatory bodies. He worked with EU commission on quantifying benefits of a fully integrated European energy market including consideration of bulk energy trading, balancing markets and EU wide capacity market. He is member of UK Government Panel of Technical Experts involved in the implantation of the Electricity Market Reform, a member of the Steering Committee of the SmartGrids European Technology Platform, involved in EU Smart Cities Action Cluster on Sustainable Districts and Built Environment, and Director of the UK Centre for Grid Scale Energy Storage, He co-authored 4 books and published over 180 technical papers.

Eng. Essam R. Al Wafi is the East Control Support manager at National Grid, Saudi Arabia. He earned an M.Sc. in Electrical Engineering from KFUPM, and he is currently pursuing a Ph.D. in electrical engineering as well. He started his career in 2002 in Eastern Power Control Center, Saudi Electricity Co. He held/acted as East chief of operation, East system monitoring manager, East operation and control manager at National Grid. He led/worked with several working groups and committees on subject related to power systems polices and procedures, RES grid code updates, KPI's and compliances, black start plans & disturbance analysis and many operation related subjects.

Contact Us

Dr. Ali Al-Awami
Course Coordinator
EE Department, KFUPM
P.O.Box 5038, Dhahran 31261
Tel: +966-13-860-2712
Mobile: +966-54-933-1381
Fax: +966-13-860-3535
E-mail: aliawami@kfupm.edu.sa