EE 705: SYNCHROPHASOR TECHNOLOGY (3-0-0 : 3)

Preamble

In the past decade, the development of robust and reliable communication technology along with GPS technology has lead towards the development of Synchrophasor based Wide Area Monitoring and Control of large interconnected power system. This new technology provides a fast and reliable update of state variables of power system, which find its application in effective monitoring and coordinated control of various components in power system. The objective of the course is to introduce students to this new technology of wide area monitoring and their emerging applications.

Course Contents

Introduction to Synchrophasor technology: basic architecture and communication requirement; Phasor and frequency estimation; Basic principles for Wide area monitoring and control in real-time; Dynamic modeling of synchronous generator; Transient stability monitoring and control; Small signal monitoring and control; Wide area power system stabilizers; Synchrophasor applications inpower system protection and emergency control; Optimal placement of phasor measurement units; State estimation; Real-time monitoring and control of voltage stability.

References

1. G. Phadke and J. S. Thorp, Synchronized Phasor Measurements and their Applications, Springer.
2. M. Shadidehpour and Y. Wang, Communication and Control in Electric Power System, Wiley.
3. P. Kundur, Power System Stability and Control, McGraw-Hill.
4. P. M. Anderson and A. A. Fouad, Power System Control and Stability, Wiley.
5. Hsiao – Dong Chiang, Direct Methods for Stability Analysis of Electric Power Systems: Theoretical Foundation, BCU Methodologies, and Applications, Wiley.