EEE 598 WAMS-Based Applications in Power Systems (3) [S, 2018]

Course (Catalog) Description: Investigate role of advanced instrumentation in monitoring, protection, and control of power systems. Analyze effects of instrument transformers, signal conditioning circuits, A/D and DSP chips, time synchronization and sampling, output circuits and devices, and communication channels. Implement state-of-the-art algorithms by computer software.

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Class Location: ECG 237
Class Timings: 3:00 PM – 4:15 PM on Tuesdays and Thursdays

Prerequisites: Open to electrical engineering graduate students

Reference Book: A. G. Phadke, and J. S. Thorp, Synchronized Phasor Measurements and Their Applications, 2nd Edition, Springer, 2017.

Course Topics:

1. Introduction
2. Instrument Transformers
3. Input Channel
4. Sampling and Time Synchronization
5. Microcontroller Operation
6. Phasor and Frequency Estimation
7. Monitoring Applications
8. Protection Applications
9. Control Applications
10. Synchrophasor Standards

Grading Policy:
Homework = 40%
Projects = 50%
Class Participation = 10%

Teaching Methodology: Lecture notes will be posted in Blackboard. Scribes will be assigned at the start of the class to capture the discussions that will occur. Projects will be assigned either individually or in groups (depending on class size). Students are also encouraged to explore topics of their personal interest (as a project) as long as (i) the topics are relevant to the course, and (ii) the student/s have prior permission from the instructor.

Academic Integrity Policy at ASU:
Every student is expected to understand and know ASU's Academic Integrity Policy: http://provost.asu.edu/academicintegrity. If at any time you are not sure about what is allowed/acceptable, ask the instructor.