Based on familiar textbook

Power Generation Operation and Control

Allen J. Wood
Bruce F. Wollenberg
Gerald B. Sheble

First edition 1984
Second edition 1996
Third Edition 2013
What’s in the course?

- Emphasis on business model of electric companies and how that effects operations
- Emphasis on markets
  - How markets operate
  - How generating companies interact with markets
- Sections on system security and optimal power flow
- Short term load forecasting
Deregulation means that the electric industry has to be understood as a business.
Old and new types of generation
Existing techniques such as generator unit commitment must be understood.

Scheduling Generation to meet hourly load over a week

Hourly load for one week

MW

Sunday Monday Tuesday Wednesday Thursday Friday Saturday

Hours
Mathematical optimization techniques included in the course

- LaGrange methods with KKT conditions
- Dynamic programming
- Linear programming
- Convex programming
- Interior point method
- Least squares methods
- Integer programming
Operational Technologies

- Comparison of linear (DC power flow) OPF and full AC OPF
- State estimation using Phasor Measurement Units (PMUs)
- Implementation of market dispatch using centralized auctions
- Mathematical techniques of demand forecasting
This online course by Professor Wollenberg uses his textbook.