1 Course Description

Broadly, this course aims to acquaint students with the economics and optimal operation of modern electric power systems. Topics include optimal power flow, economic dispatch, electricity markets, and emerging techniques for renewable energy integration. Strong emphasis will be placed on the development and application of techniques to solve convex and stochastic optimization problems. By the end of the course, students will have developed a firm grasp of optimal power system operations, the emerging challenges facing deep renewable energy integration, and tools to effectively tackle said challenges.

2 Instructor Information

Instructor: Eilyan Bitar
Office: 326 Rhodes Hall
Office Hours: Tuesday, 4:30 - 6:00 PM
Email: eyb5@cornell.edu
Phone: (607) 255-7156

Course website: Blackboard

3 Lectures

Lectures will be held Monday/Wednesday (2:55 - 4:10 PM) in 403 Phillips Hall.

4 Prerequisites

ECE 2200, ECE 3100, and comfort with Matlab programming.

5 Textbooks

The course lectures will be self-contained. However, there are several textbooks (not required) that may serve useful as auxiliary or reference texts.
We will occasionally make use of the following Matlab software packages.


7 Grading

Your final grade will be based on homework (30%, assignments equally weighted), midterm (30%), and final (40%). These weights are approximate and we reserve the right to change them later. The final will either be exam or project based – to be determined 4 weeks into the semester.

8 Collaboration and Code of Conduct

Every student attending this course is expected to abide by the Cornell University Code of Academic Integrity, which can be found at cuinfo.cornell.edu/Academic/AIC.html. Any piece of work you turn in for credit must be your own work. Discussion with other students about specific homework problems is permitted to the extent that discussion is limited to problem approach and does not include note taking. In writing up your homework solution, you must acknowledge anyone with whom you collaborated. If you use papers or books or other sources (e.g. material from the web) to help obtain your solution, you must cite those sources. You may not discuss exam problems with other students. Please ask if you are unclear as to what constitutes excessive collaboration.

9 Misc

The midterm will take place in the evening to provide students with ample test time. To compensate students for the additional time commitment outside of normal class hours, two to three regular lectures will be canceled.