



Course title and number ECEN 689: Engineering and Economics of Competitive Power Systems
Term (e.g., Fall 200X) Spring 2010
Meeting times and location TR 5:30-6:45pm ZACH 128A

Course Description and Prerequisites

Operation and planning issues in the deregulated electric power industry; basic engineering, optimization and economic concepts relevant to this course; operation and planning practices in vertically integrated and deregulated industry structures; computer simulations and demos will be available to create and evaluate examples of power systems.

Prerequisite: ECEN 460 or equivalent, or permission from the instructor

Learning Outcomes or Course Objectives

We will discuss a broad variety of important engineering and economics issues related with the deregulation of the power industry. We will introduce the key differences in operations and planning at the system level, as well as at the individual power producers' level. Classroom discussion and final project presentations will prepare the students to understand better how the competitive power systems work.

Instructor Information

Name Le Xie
Telephone number TBC
Email address TBA
Office hours TBC
Office location TBC

Textbook and/or Resource Material

1. D.S. Kirschen and G. Strbac, Fundamentals of Power System Economics, Wiley 2006
2. Research papers assigned by the instructor

Grading Policies

Homework Assignments (20%) + Mid-term Exam (30%) + Final Project (40%) + In-class Quiz (10%)
A (100-85%), B (84-70%), C(69-55%), D (54-40%), F(39-0%)

Course Topics, Calendar of Activities, Major Assignment Dates

Lecture	Topic
#1	Course Motivation and Overview; Syllabus
#2	Review of Electric Power System Fundamentals
#3	Basic Concepts from Optimization
#4	Basic Concepts from Economics [1], Ch2

#5	Power Systems Operations: Old Vs New
#6	Power Systems Operations: Old vs New
#7	Markets for Electric Energy [1], Ch 3
#8	Balancing Supply and Demand in the Regulated Industry; Electric Markets as a Means of Balancing in the Changing Industry
#9	Balancing Supply and Demand Deviations from Forecast in the Regulated Industry;
#10	Ancillary Service Markets as a Means of Balancing Demand Deviations from Forecast in the Changing Industry
#11	Participating in Markets for Electric Energy [1], Ch 4
#12	Power Delivery under System Constraints in the Regulated Industry (Optimal Power Flow)
#13	Transmission Networks and Electricity Markets
#14	Financial Transmission Rights
#15	Material Review; Simulations Demonstrations
#16	Mid-term Exam
#17	Financial Transmission Rights and Flow-gates [1] Ch. 6
#18	Two-part tariffs; Peak-load pricing for transmission pricing (Project Proposal Due)
#19	Investment in Generation for Regulated Industry
#20	Investment in Generation in the Changing Industry
#21	Investment and Planning in Transmission: Old Vs. New
#22	Guest Lecture by Professor Steve Puller (Economics Department)
#23	Guest Lecture by Dr. Jiachun Guo (ERCOT): Operations of ERCOT Systems (Tentative)
#24	Dynamics of Generation Scheduling in the Changing Industry (Managing Risks)
#25	Reliability Criteria in the Changing Industry
#26	Challenges in Operations Due to Renewable Variable Resources Integration: Part I
#27	Challenges in Operations due to Renewable Variable Resources Integration: Part II
#28	Course Review
#29	Final Project Presentations

Other Pertinent Course Information

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit <http://disability.tamu.edu>

Academic Integrity

For additional information please visit: <http://www.tamu.edu/aggiehonor>

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”