(Spring 2011)  
Thursdays, 9:30am – 11:45am  
(NOTE: FIRST CLASS WILL BE 2/3/2011)  
Room: Doolittle A102 (Rutgers)  
TBD (Princeton)  

Rutgers University Course Number: 34:970:670:01  
special permission numbers are required.  
Email Lynn AstorSga (lastorga@rci.rutgers.edu)  

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Course Description  
The purpose of this course is to explore in-depth several important energy topics that  
inTEGRate engineering, economics and policy. It is designed for doctoral students in the  
natural sciences, engineering, and social sciences that have been exposed to a wide-  
range of energy topics, perhaps as part of a National Science Foundation IGERT  
program, and are interested in further investigating some of those topics. After  
reviewing key elements of economic and policy analysis, the course covers the  
engineering, economics and policy of the electric power grid, integrated energy  
assessment, and energy security.  

Topics (Tentative)  
1. Week 1: Introduction: Micro-economic and policy analysis (Felder)  
   a. Supply and demand  
   b. Social welfare and marginal analysis
c. Brief review of optimization

d. Perfect competition and market power

2. Weeks 2-8: The engineering, economics and policy of the electric power grid (Felder)
   
a. Engineering economics and the time value of money
b. Levelized cost of electricity
c. The economic dispatch problem
d. The unit commitment problem
e. Cost-of-service electric utility regulation and markets
f. De-carbonizing the grid
g. Transportation and the grid
h. Electricity and economic development

3. Weeks 9-10: Integrated Energy Assessment (Glaser)

4. Weeks 11-12: Energy and Security and Course Wrap-up (Glaser and Felder)

**Course Texts**

F. Felder, *In-depth Introduction to Electricity Markets*, World Scientific, draft


Additional readings will be provide throughout the semester

**Websites**

Harvard Electricity Policy Group: http://www.hks.harvard.edu/hepg/

**Grading**

30% weekly problem sets, 20% midterm, 35% final paper and 15% class participation