# Spring 2012 Seminar:
# EE392N – Intelligent Energy Systems

Time:          Tuesday, 4:15-5:05PM

Place:          Building 380 Room 380D

Coordinators:  Dan ONeill and Dimitry Gorinevsky, Consulting Professors

Prerequisites: (helpful but not required) Basic statistics, systems or control, Stat 116, EE278A, EE263, Eng207

Website:        http://www.stanford.edu/class/ee392n/

## Course Description

The technology boom in energy sustainability is driven, in part, by modern information system technologies. Sustainable energy systems must have the intelligence to cope with rapid changes in energy supply, demand, distribution, and storage. This intelligence is implemented in computing systems as analytical functions that process the real time and historical data to enable management, optimization, and monitoring.

The course will focus on analytic techniques used in modern energy systems and on the infrastructure required to support such techniques. The main focus will be on monitoring applications. The goal of the course is to prepare the students for careers in energy related areas by teaching systems engineering perspective. One part of the course will discuss information systems technologies enabling the use of the analytics. These include data communications over large physical areas covered by the energy system, management of the large amounts of data involved (Big Data), and the modeling of large area electric power interconnects.  Another part of the course will focus on the analytics. The course will discuss analytics for monitoring of the power generation systems, power transmission and distribution systems, asset management, and energy use in buildings. The examples and case studies illustrating the analytics functions and information systems in energy will be presented by prominent guest lecturers from industry.

The tentative list of the lectures is as follows:

1. Introduction - Dan ONeill and Dimitry Gorinevsky
2. Data Center Energy Management: HP
3. System Infrastructure for Monitoring: Cisco
4. Electrical Power Systems Modeling: GridSpice
5. Building Energy Applications: UTC
6. Communication Architecture: Cisco
7. Data Management Architecture: HP
8. Energy Management Systems for the Grid: GE
9. Power Generation Monitoring : GE
10. Integrated Building Systems: Honeywell