Buildings and Energy: Design and Operation vs. sustainability

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A graduate/undergraduate multidisciplinary course,
developed with financial support from FESC
Motivation

- The need to address the energy efficiency topic from all angles, i.e. design, construction, operation, which manifests itself in lack of energy efficiency of buildings.
- Bridging the gap between different professions involved and create common knowledge base.
- Create a learning environment to students working professionals for dissemination.
- Create an opportunity for interdisciplinary research via knowledge cultivated through integration of input from parties involved.
- Short term efforts are funded through FESC for a course development and delivery project.
Course Goals

- Define the role of buildings in the energy sector
- Identify design and operational issues in achieving energy efficiency,
  - Better design doesn’t always lead to better performance
  - Poor operation leads to energy wastage
  - Design for operation?
- Existing courses in the building sector: architecture, construction, energy analysis, HVAC design, etc., but lack integrated approach, and specific to Florida climate reduces the viability of these to masses.

- Goal: Energy Engineering Course for Florida-Specific Buildings (3 cr)
Course Overview

- Target audience: both undergraduates and graduates in engineering, construction, and architecture.

- Project started in April 2014. Course development in progress. First offering planned for Fall 2014.

- To be offered through UF-EDGE (Electronic Delivery of Gator Engineering) for broader reach.
Course Topics

- Energy Codes, Standards & Protocols
- Ratings Systems
- Load Calculations & Equipment Sizing
- HVAC Operations
- High Performance Building Design
- Smart Buildings, Smart Grid
- Life Cycle Assessment