Lessons Learned:
Developing a Showcase Central Utility Plant for the University of Florida’s College of Veterinary Medicine

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Background
Background
Background
Background
The Problem: Infrastructure
The Problem: Operational

42 Deg / xlbs
The Problem: Financial

U.S. INFRASTRUCTURE NEEDS OVER THE NEXT 10 YEARS

- **STREETS, ROADS**: $934 MILLION
- **ELECTRICITY**: $870
- **SCHOOLS**: $157
- **AIRPORTS**: $154
- **RAIL**: $150
- **WATER, WASTEWATER**: $114
- **PARKS, RECREATION**: $80
- **LEVEES**: $45
- **DAMS**: $37
- **WATERWAYS, PORTS**: $7

**TOTAL FUNDING NEEDED**
- **$2.0 TRILLION**

**Funded**
- **$0.5 TRILLION**

**SOURCE**: AMERICAN SOCIETY OF CIVIL ENGINEERS, CONSTANT 2015 DOLLARS

* INLAND ** HAZARDOUS AND SOLID WASTE
The Problem: Political
The Solution: Operational

Facility Pumps Metabolic Building – New Pumps (with New)

Existing Plant Secondary Pumps – To Remain

Facility Pumps 1017 – Relocated (with New)
The Solution: Total Cost of Ownership

10% of a building's lifetime cost is in the construction budget.

90% of the total cost of a building is in the operating budget. These costs include:

- Lighting
- Heating
- Cooling
- Maintenance
The Solution: Total Cost of Ownership
The Solution: Delivery Vehicle

DESIGN : BID : BUILD
The Solution: Modified Delivery Vehicle

DESIGN : BUILD

OWNER

BUILDER

ENGINEER
The Solution: Modified Delivery Vehicle
The Solution: Living Laboratory
ARC891 Optimizing Performance in the Built Environment
Spring 2014  New course, first time offered.
1/7th, 3rd-4th Period, 3 Credits

"Unfortunately, the vast majority of buildings exist as untested hypotheses. Little in the way of performance evaluation or structured feedback from the owner and occupants is typically sought."

This interdisciplinary Graduate Level course will serve as an introduction to green building rating systems, with a focus on the USGBC accreditation Leadership in Energy and Environmental Design (LEED™). Students will actively perform assessments of existing buildings, to develop an understanding of the complex interrelationships among building envelope and orientation, mechanical system design, lighting systems, occupant usage patterns, maintenance protocols, and the effect of these factors on resource consumption. Successful completion of this course will fulfill the eligibility requirement to take the LEED Green Associate exam.

As the quote above implies, most buildings are elaborate experiments constructed at great expense, but from which little or no data is gathered by the designers. This course will provide students with the opportunity to collect and analyze that data, in order to carry the lessons learned forward in an integrated design process. Teams of students will be assembled to prepare case studies of a campus building, focusing on energy consumption and water usage. The case study process will complement the theoretical understanding of the effects of building envelope, mechanical systems, lighting systems, and occupant usage patterns on energy consumption.

This course will be taught by a team of interdisciplinary faculty, including:

S. A. S. C. E. M. A. S. R.
Sadah Armaghan, Jr. Ph.D. Professor Mechanical & Aerospace Engineering
Michael Michael, Ph.D. Professor C. E. M. A. S.
Renesto, P.A. Assistant Professor C. E. M. A. P.
LEED AP EDC Senior Director, Industrial Assessment Center
Director, UF LEED Program University of Florida

To register, please contact GSOA Graduate Program assistant Becky Hudson bhudson@ufl.edu. Reference the course section number 003D.

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Wrap-Up & Questions
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