CE/ME 448 Green Building Strategies: LEED Lab

Catalog Description: (4 credits)
This is a multidisciplinary course that utilizes the built environment’s performance, operations and maintenance to educate and prepare students to become green buildings leaders and sustainability-focused citizens. This course will equip students with the skills, knowledge and expertise needed to be effective communicators, project managers, critical thinkers, problem solvers, engaged leaders, and team players in the field of sustainability. Campus buildings will be used to improve performance of the building through measurement and verification, operation, and maintenance with the application of green building rating systems focused on LEED V4 for Existing Buildings Operations and Maintenance. Successful course completion can prepare the student for LEED V4 Green Associate or O+M specialty exams credentials. CE 442 / ME 442 is cross-listed.

Required or Elective:
This course is an upper elective course for civil and mechanical engineering students.

Textbook:
LEED V4 for Existing Building Operations and Maintenance Reference Guide. 2018. USGBC. (required)

Course Topics
Review green building rating systems with focus on LEED EB;O+M - Green building/LEED goals, benefits, certification and recertification
Building occupancy schedule and operation - Occupancy, Full time equivalent (FTE), part time & transient
Energy Conservation Strategies and Measures: Energy efficiency best management practices ; Optimize energy performance -Advanced energy metering -Demand response -Renewable energy and carbon offsets -Enhanced refrigerant management; Existing building commissioning analysis
Sustainable Site and Transportation
Water Conservation Measures and Efficiency
Building Operations, Martial Consumption
Indoor Environmental Quality, Health and Wellbeing
Quality Control of the Documentations and final Review

Course Learning Objectives:
This course is designed to produce the following outcomes:
- Students’ ability to assess the performance of existing buildings and facilitate the LEED for Existing Buildings:
- Equip students with the skills, knowledge needed to be effective communicators, project managers, critical thinkers, problem solvers, engaged leaders, and team players to meet the needs of today’s industry.
- Assess and explore techniques to improve building exterior, site, water and energy consumptions, remodeling, waste management, and purchasing.
- Understand LEED-EB: O+M pre-requisites and credits and the tools needed for implementation, and recognize synergies between multiple credits.
- Learn LEED project administration, registration, submission, and LEED online utilization.
- Recognize how improving building operation and maintenance lead to higher performing buildings.
- At the end of the semester the students can be prepared for LEED Green Associate (GA) or LEED EB: O+M professional credential exam.

Methods of Evaluations
Weekly quizzes 20% Attendance & participation 20% Final project report and presentation 20% Peer group evaluations 20% Score on LEED GA or AP exam 20%