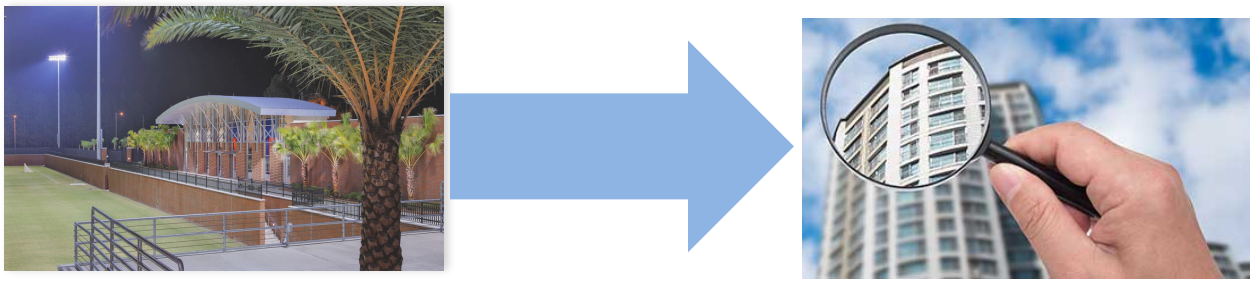
DCP4214 | Class 23281 | Section 775 | 6 Credits
Green Building Strategies (LEED Lab)
| Fall 2020 | 100% Online Synchronous

Instructor:	Bahar Armaghani | LEED Fellow Director & Lecturer | Program in Sustainability and the Built Environment (SBE) College of Design, Construction, and Planning (DCP) | University of Florida
Office Correspondence:	352.294.1428 | Canvas email (preferred) | barmagh@ufl.edu (alternative)
Course Time & Location:	Tuesdays | Period 6-8 | 12:50 – 3:50 | Synchronous Zoom | Thursdays | Period 6-8 | 12:50 – 3:50 | Synchronous Zoom | https://ufl.zoom.us/j/91974785669?pwd=WktHd0JCWjcyQ1hTY3FKWmJiSUJhUT09
Course Co/Prerequisite:	DCP3210 (or) another course in the topic area and approved by the Instructor
Final Exam Schedule:	N/A
Virtual Office hours:	Zoom | Tuesdays | 8:30-9:30 am | Thursdays | 10:30-12:30 pm | Zoom | By appointment https://ufl.instructure.com/courses/404421/external_tools/166364
Course Website:	https://ufl.instructure.com/courses/404420 for modules, announcements, assignments, discussions, lecture slides, readings, quizzes, and grades

Strategies to Build Green
And
Transforming Existing Buildings into High Performance Sustainable Buildings

While the environmental performance of new commercial buildings in the United States has been improving dramatically in recent years, most existing buildings were constructed when energy was less expensive, technologies were less advanced, and environmental performance rarely a priority. Older, existing buildings generally use significantly more energy and water than new buildings of the same size and function. According to the Institute for Building Efficiency, existing buildings that are 20 years and older make up more than 70 percent of the built environment by square footage. Thus, existing buildings offer tremendous opportunities to conserve energy and water as well as provide healthier, more productive work environments. *EPA*



This course will focus on testing an existing green building; LEED certified and examine its performance.

Course Description

This is an interactive multidisciplinary course, in which students will be introduced to green strategies and technologies for the design, construction and operation of high performance buildings. The course is designed to equip students with the skills and knowledge needed to be effective communicators, critical thinkers, project managers, problem solvers, and team players. Students learn the strategies for greening facilities with green building rating systems in mind and a focus on the principles of Leadership in Energy and Environmental Design (LEED). An on-campus building/project will be used for hands-on learning, virtually though this semester due to COVID-19. In addition, successful course completion can prepare the student for LEED™ V4 Green Associate and Accredited Professional exams.

Learning Objectives

This course's objectives to facilitate students' learning and leadership in the green building industry. The objectives emphasize on building assessment, identify problems, and propose solutions to optimize building performance via at home preparation, in-class discussions, videos, online engagement, and individual and collaborative team assignments. Students will:

- Learn to assess existing buildings performance using tools needed for energy, water, IAQ, and lighting audit.
- Analyze consumption data and calculate ROI for energy, lighting and water reduction use.
- Assess and develop polices and techniques to improve building exteriors, site, water and energy consumption, remodeling, waste management, and purchasing.
- Apply LEED™ V4 for Existing Buildings: Operations and Maintenance (EB: O+M) process with the goal of certifying the facility and compare to LEED v4.1 for Existing Building.
- Understand the value of teamwork and each team members' contribution to the success of the project.
- Learn the skills and tools needed in today's green industry including Energy Star Portfolio Manager, Energy Star Target Finder, Arc, LEED online, Ecomedes, utility data analysis, and HelioScope: advanced solar design software.
- Prepare students for LEED™ V4 Green Associate (GA) and LEED™ V4 professional credential exams.

Student Learning Outcomes (SLO)

Upon completion of this course, successful students will be able to:

- Distinguish the similarities and differences between different green building rating systems.
- Understand how to manage, administer, and apply LEED v4.0 and 4.1 to projects.
- Formulate and deliver high quality verbal arguments and written reports and proposals.
- Demonstrate competency and professionalism in consulting and advising clients to optimize building performance.
- Interact effectively with confidence in a team setting and take initiative to lead.
- Communicate effectively and passionately the benefits of building green.

Required Text/Reading:

- Weekly readings posted under each module on Canvas e- Learning portal, https://ufl.instructure.com/courses/404420. Students expected to complete readings as advance preparation for class discussion and exercise.
- LEED V4 , EB; O+M, file:///C:/Users/barmagh/Downloads/LEED_v4_EBOM%20(1).pdf

In addition to the required text(s), various supplemental, free publications identified for class discussion and/or Assignments supplied via the UF Canvas e-Learning portal (https://lss.at.ufl.edu/), such as the following:

Other Resources

- USGBC Resources, https://www.usgbc.org/resources
- Calculators, https://www.usgbc.org/resources?LEED+Resources=%5B%22Calculators%22%5D
- Certification, https://www.usgbc.org/resources?LEED+Resources=%5B%22Calculators%22%5D
- LEED Checklists, https://www.usgbc.org/resources?LEED+Resources=%5B%22Checklists%22%5D
- Standards, https://www.usgbc.org/resources?LEED+Resources=%5B%22Standards%22%5D
- Tools, https://www.usgbc.org/resources?Education+Resources=%5B%22Toolkit%22%5D
- LEED case studies, https://www.usgbc.org/resources?Education+Resources=%5B%22LEED+Case+Studies%22%5D
- LEED candidates handbook, https://www.usgbc.org/resources?Credentialing+resources=%5B%22Candidate+Handbooks%22%5D
- **GSA**, https://sftool.gov/
- **Making tight envelope,** https://www.buildinggreen.com/sites/default/files/ebn/TBGR_26-08.pdf
- BuildingGreen, Homepage, ***UF membership access*** | https://www.buildinggreen.com/
  Knowledge Base | https://www.buildinggreen.com/knowledge-base
  Product Guidance | https://www.buildinggreen.com/product-guidance
- Green Building Advisor, Homepage | https://www.greenbuildingadvisor.com/
  Green Basics | https://www.greenbuildingadvisor.com/green-basics
- My Florida Home Energy, Homepage | http://www.myfloridahomeenergy.com/
  Find Help | http://www.myfloridahomeenergy.com/help/
- U.S. Green Building Council, ***UF membership access*** | www.usgbc.org
- LEED User, ***UF membership access*** | www.leeduser.buildinggreen.com

Course Modules

General course module main topics and sub-topics are summarized below. Course modules and topical content including readings, assignments, discussions, PowerPoints, and final project are expound on within Canvas and may be subject to change.

Date	*Modules*	*Module Main Topics*	*Module Sub-Topics*
9/1/2020	0	Start Here	• Welcome to the course • Course overview • UF resources and policies

9/8/2020	1	Introduction to Green Building rating systems, Benefits, and Goals	• Review green building rating systems including:
			  ○ Green Globes
			  ○ BREAM
			  ○ ASHRAE 189
			  ○ Living Building Challenge
			  ○ IGCC
			  ○ with focus on LEED™ V4 and V4.1
			• UF campus sustainability overview and status

9/15/2020	2	Where and how to start a project	• Project assessment and planning • Assess LEED™ V4.0 scorecard for Lacrosse and compare to LEED V4.1 • Access and manage LEED™ V4.0 and V4.1 online.
9/22/2020	3	Project Administration	• Project history • Utility data analysis for the last 5 years • Building drawings; architectural and MEP • ***Guest speaker: Paul Shahriari, CEO, Ecomedes***
9/29/2020	4	Energy Audit and Energy Star Rating	• Energy conservation overview • Energy efficiency and conservation strategies overview • Building MEP drawings (Mechanical only) • Energy molding, ASHRAE 90.1 • ASHRAE Level 1, energy audit process, approach, and equipment/tools
10/6/2020	5	Energy Conservation, Commissioning, Renewable Energy	• Renewable energy source, assessment, tools, cost and ROI • Specifying and sizing a system • Helioscope for renewable assessment • ***Guest Speaker: John Chyz, AEI, Commissioning***
10/13/2020	6	Lighting Audit with retrofit and ROI and warp up EA category	• Energy efficiency best management practices • Optimize energy performance and energy modeling with lighting retrofit • Building MEP drawings (Electrical only) • Advanced energy metering or sub-metering strategies

			• Complete requirements for EA category credits for V4.0 & V4.1 • Use Ecomedes; https://uf.ecomedesstaging.com/ • Apply ARC for LEED V4.1 building performance • ***Guest Speaker: John Lawson, UF Energy Coordinator***
10/20/2020	7	Water conservation/audit	• Indoor and outdoor water conservation • Plumbing drawings • Water use assessment, reduce demand, and strategies to decrease consumption • Net zero water • Building MEP drawings (Plumbing only) • ***Complete requirements for WE category credits for V4.0 & V4.1*** • Use Ecomedes; https://uf.ecomedesstaging.com/ • ***Apply ARC for LEED V4.1 building performance***
10/27/2020	8	Location and Transportation Strategies	• Transportation assessment and survey • ***Complete requirements for L&T category credits for V4.0 & V4.1*** • ***Guest Speaker; Barry Jacobson, President, CEO, Solar Impact***
11/3/2020	9	Sustainable Site	• Project site assessment • Rainwater management • Heat island effect, roof and none roof • Site lighting • Landscape
11/10/2020	10	Building Operation and Material Use	• Waste audit and management • Consumption and production • Eco building material • Recycling and purchasing policies
11/17/2020	11	Indoor Environmental Quality and Health and Well-being	• ASHRAE 62.1, air ventilation • ASHRAE 55, Thermal comfort • WELL • Product chemical transparency • Red list material • Interior material use • Daylight and views • Lighting • Air quality
Thanksgiving			
12/1/2020	12	Innovation and Regional Priority	• Project Regional priority

		LEED v4.0 Green Associate Exam	• LEED v4.0 exam review, registration and practice
12/8/2020	13	Final Project Presentation	• One presentation. Each team will present their section

Disclaimer: This syllabus represents my current plans and objectives. Throughout the semester, we may need to adjust with unforeseen events and conditions. Such adjustments are communicated clearly in class and via written announcements on Canvas. These adjustments are not unusual and are expected during a pandemic.

See Canvas for Additional Course Information

Additional information about the course is available on Canvas, including; instructional methods, tips for success, personal conduct policies, mobile communications and computing policies, and/or other relevant student

Class Project

This semester, the class will be working on Lacrosse Locker Room Facility, on campus building.
The class divided into 4 teams each team will present their part at the final presentation. However, each team will work on all aspects of the project from start to finish.

Final Projects/Presentations: Team Delivery

- **Energy team;** ASHRAE Level 1 energy audit report including return on investment (ROI). In addition, complete Energy & Atmosphere credits submission with backup documentations. Prepare final presentation to the client and include comparing to LEED v4.1.
- **Indoor Environmental Quality and Site team;** Report on the ASHRAE 62.1, air ventilation including return on investment (ROI). In addition, complete IEQ and Site credits submission with backup documentations. Prepare final presentation to the client and include comparing to LEED v4.1.
- **Water Efficiency and Transportation team;** Report on procedures for water audit including return on investment (ROI). Also, complete Water Efficiency and Transportation submission with backup documentations. Prepare final presentation to the client and include comparing to LEED v4.1.
- **Lighting and Material & Resources team;** Report lighting audit including return on investment (ROI). Also, complete Material and Resources credits submission with backup documentations. Prepare final presentation to the client and include comparing to LEED v4.1.

Assignments and Grading

Assignment details, deliverables, due dates, and grades are published on Canvas and may be subject to change.

Grading Category	*Additional Details*	*Points*
Attendance & Punctuality	Required	5
Readings (Individual)	Readings, and checklist assessment (points vary) (0-15) • Weekly & Module-Based	15
Discussion (Individual)	Discussions (points vary) (0-15) • Weekly & Module-Based	15
Presentations (Team)	PowerPoint presentation (points vary) (0-15) • Weekly & Module-Based	15
Exams	• Mid-term (15) • Final (15)	30
Final Project	Final Class Presentation	20
	Total	**100**

Grade and Grading Policy:

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Numeric Grade	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	0-59
Quality Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0.0

Final student grades will follow University of Florida grades and grading policies.

- Undergraduate Students: https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Attendance Policy, Class Expectations, and Make-Up Policy

- Attendance is mandatory and participation is graded based on each class period (i.e., missing a multi-period day of class will count as multiple absences in accordance with the number of periods).
- Students should expect to participate via live video with dress and demeanor befitting an online workplace.
- Do not post Zoom meeting screen shot on your social media.
- Students may miss up to the equivalent number of class periods as the course credits (e.g., 3 credits = 3 periods @ 50 minutes/each in Spring/Fall & 2 periods @ 75 minutes/each in Summer A) without penalty and with no need for an excuse. Beyond those "waived" absences, students must provide a valid, and properly documented, excuse.
- Otherwise, unexcused points will be deducted proportional to the total number of periods where attendance was taken. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with University policies as found at: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/
- **Follow UF Netiquette – Communication Courtesy:**

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Please refer to:
http://biostat.ufl.edu/resources/e-learning-resources/e-learning-basics/etiquette-online/ (Links to an external site.)

Note: it is an honor code violation to share the link video recording link to people outside of your course. If students appear in the video, this may also be a Family Educational Rights and Privacy Act (FERPA) violation.

Etiquette

- Be Present. This will allow you to get the most out of class time as well as for your classmates to get the most out of their collaborations with you.
- Put your cell phone away unless you are actively using it to further the class activities.
- Be prepared. The readings and videos have been carefully chosen to support the class activities.
- Listen carefully and do not interrupt others.
- Give quality feedback. What constitutes "quality" will be discussed in class.
- Respect the opinions of others, even when you do not agree.
- Keep an open-mind; embrace the opportunity to learn something new.
- Avoid monopolizing the discussion. Give others a chance to contribute and be- heard.
- Do not be afraid to revise your ideas as you gather more information.
- Try to look at issues from more than one perspective.
- Respect others by learning and using the name and pronoun they prefer.
- Do not use offensive language.

University Policies

Online course evaluation
Students expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://gatorevals.aa.ufl.edu/students/ . Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/ . Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Students with Disabilities:
Students requesting accommodation for disabilities must first register with the Disability Resource Center (DRC). The DRC coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.
Upon registering, the DRC will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations. Contact DRC at **352-392-8565**, or viewing, www.dso.ufl.edu/drc/.

Student Honor Code and Academic Honesty
UF students are bound by The Honor Pledge, which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions.

Software Use:
All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. As such, violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Religious Observances:
Please inform the instructor of any religious holidays or other days of special religious significance that may interfere with your participation in this class so that appropriate accommodations can be made.

Sexual Harassment:
Sexual harassment is reprehensible and will not be tolerated by the University. It subverts our academic mission and threatens the careers, educational experience, and well-being of students, faculty, and staff. The University will not tolerate behavior between, nor among, members of this community that creates an unacceptable working environment.

Other Campus Resources

Career Resource Center, Reitz Union, **392-1601.** Career assistance and counseling.
http://www.crc.ufl.edu/

Library Support, **http://cms.uflib.ufl.edu/ask/**. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, **392-2010 or 392-6420**. General study skills and tutoring.
http://teachingcenter.ufl.edu/

Writing Studio, 302 Tigert Hall, **846-1138**. Help brainstorming, formatting, and writing papers.
http://writing.ufl.edu/writing-studio/

Student Complaints Campus: **https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf/**
On-Line Students Complaints: **http://www.distance.ufl.edu/student-complaint-process/**