



DCP4214 Green Building Strategies, LEED Lab has met all the essential UF Quality standards and received a total of **141/142** points. The course has received the **Exemplary** designation.

**DCP6301 | DCP 4214 | Class 18949 | Section LEED |
6 Credits | Green Building Strategies (LEED Lab)
|Fall 2024|**

Instructor:	Bahar Armaghani LEED Fellow WELL Faculty Director & Instructional Associate Professor 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 Architecture Building, Room 411 Thursdays Period 6-8 12:50 – 3:50 Architecture Building, Room 411
Course Co/Prerequisite:	DCP3210 (or) another course in the topic area and approved by the instructor
Office hours:	Tuesdays 8:30-10:30 am Thursdays 8:30-10:30 am Or By appointment Rinker Hall, Room 322
Course Website:	https://ufl.instructure.com/courses/508164 for modules, announcements, assignments, discussions, lecture slides, readings, quizzes, and grades
Graduate students	<i>Graduate students are required to demonstrate Project Management competencies and application of advanced analytical skills as it relates to implementation of LEED certification for Building Design, Construction and Major Renovation, and Building Operation and Maintenance projects. In this syllabus, graduate students' deliverables are delineated in italics in the Final Project description and highlighted in light gray.</i>

Strategies to Design and Build High Performance Sustainable Buildings

As Part of UF’s commitment to sustainability in operation, teaching, and research, since 2003, UF integrated sustainability into the development, planning, design, construction, and operations of its buildings on & off campus. UF has been using Leadership in Energy and Environmental Design (LEED™) as a framework to design, build, and operate green for over two decades. In this course, a campus building/project is selected for class project, this semester LEED™ V4 for New Construction and Major Renovation will be applied to the DCP Collaboratory project. An introduction to the [Department of Energy Zero Energy Buildings design](#) approach, benefits, and needs integrated into the course to think beyond LEED application to the built environment.

Class project, UF-653- DCP Collaboratory



Course Description

This is a multidisciplinary course, in which students are 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 new construction and the need to continue through operation with applying green building rating systems principles and framework of Leadership in Energy and Environmental Design (LEED™). Students will understand the alignment of the [United Nations Sustainable Development Goals \(UN SDGs\)](#) with green building strategies. This semester, **UF-653- DCP Collaboratory project/building** is used for the class project and hands-on learning. Successful course completion can prepare the student for LEED™ V4 Green Associate (GA) and Accredited Professional (AP) credential exams.

In addition, this semester the course integrated the [Department of Energy Zero Energy Buildings design](#) strategies that addresses building science principles that are paramount to the successful design of high-performance, energy-efficient buildings to prepare the students for net-zero emission economy by 2050 and trigger them think beyond LEED.

Learning Objectives

This course's objectives are to accelerate students' learning and leadership in the green building industry. The objectives emphasize project planning, design, construction, and operations. Students will:

- Compare and contrast different green building rating systems and apply LEED™ V4 to a building design and construction.
- Describe the strategies used to design Net-Zero energy building including types of energy, renewable energy, building envelope, HVAC, lighting, and plug load.
- Assess the application of LEED™ V4 strategies and technologies to the project's site, location and transportation, water and energy conservation, material use, and Indoor Environmental Quality (IEQ).
- Apply the skills and tools needed in today's green building industry including Energy Star Portfolio Manager, Energy Star Target Finder, energy modeling, Arc, LEED™ V4 online, Ecomedes, metering utility and analysis, and HelioScope.
- Analyze LEED project from inception to post occupancy.
- Prepare students for LEED™ V4 Green Associate (GA) and LEED™ V4 Accredited Professional (AP) credential exams.

Student Learning Outcomes (SLO)

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

- Acquire the knowledge, skills, tools, and confidence needed to optimize the built environment and to thrive in the green building industry.
- Apply Net Zero energy building standards that will lead to net zero emission economy.
- Formulate and deliver high quality verbal and written communication.

- Earn LEED credentials.
- Value the worth of teamwork and each team member's contribution to the success of the project.

Required Text/Reading:

- No textbook required, but below links from USGBC, UN, and DOE are integrated into the course
- <https://www.usgbc.org/guide/bdc> , <https://www.usgbc.org/leed> , <https://www.usgbc.org/leed/why-leed>, [LEED Crosswalks](#),
- [LEED V4.1 information](#)
- [United Nations, Sustainable Development Goals \(UN SDGs\)](#).
- <https://www.solardecathlon.gov/building-science.html>
- Weekly readings posted under each module on Canvas e- Learning portal, <https://ufl.instructure.com/courses/508164>
- Students expected to complete readings and watch videos assigned as advance preparation for class discussion.

Course Format

Approach: The course approaches a real project setting, using an on-campus building/project. This semester the class is using [UF-653, DCP Collaboratory](#) .

Delivery Method: Lectures, discussions, field trips on campus to LEED certified building, hands on learning, guest speakers, working in teams, presentations, and quizzes.

Guest Speakers

For every module, a professionals/ subject matter expert(s) in the industry and research will present to the class to reinforce the importance of learning skills in that topic and give the students a networking opportunity with industry leaders. See modules.

Paperless Activities and Assignments:

E-learning on Canvas will be the central location for all course communication, discussion, announcements, submitted assignments, papers/projects/videos, quizzes, and presentation material.

Students are responsible for:

- Checking e-learning on Canvas for the material and presentations that will be covered weekly.
- Setting up and checking Canvas messaging to receive class announcements from e-learning.
- Submitting electronic assignments/papers/presentations/videos through Canvas.

Class Attendance and Make-Up Policy

- Attendance is required. Only excused absences can be made up. Excused absences include illness, serious family emergencies, special curricular requirements (e.g., judging trips, field trips, and professional conferences), military obligation, severe weather conditions, religious holidays, and participation in official university activities such as music performances, athletic competitions or debates. Absences from class for court-imposed legal obligations (e.g., jury duty or subpoena) are excused. Absences must be properly documented.
- See UF's requirements for class attendance and make-up exams, assignments, and other work in this course is consistent with university policies that can be found in the online catalog at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>
- 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) without penalty and with no need for an excuse. Beyond those "waived" absences, students must provide a valid, and properly documented, excuse.

Class Project

This semester, the class will be working on DCP Collaboratory, a new building/project on campus. The class is divided into four 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 during the semester. Each team will have a team manager rotating bi-weekly overseeing the team's weekly deliverables completion and submission on time, lead discussion and weekly reflection within the team, and finalize the weekly presentation.

Each team will develop a PowerPoint presentation at the end of each module with integrated UN SDGs related to the module topic and net zero energy buildings, this will become a cumulative presentation for the end of the semester. The intent of the weekly presentation is reflection on what the student learned.

Each team will present a shortened presentation from the final cumulative presentation to reflect on the semester that includes the approach, strategies, tools, skills, and technologies learned to optimize DCP Collaboratory project and the potential and recommendations for taking this project to net zero energy building.

Final Project/Teams' Presentation: Team Delivery, each team to include and identify [UN SDGs](#) that relate to the team's topic and its application to the class project and make recommendation for UF buildings and campus. In addition, the Energy team to include the strategies to take the project to net zero energy building. Here are the four teams.

- **Energy Efficiency team:** Present strategies and technologies for net zero energy building including types of energy, envelope, HVAC system, lighting, plug load, commissioning, and tools & skills needed. In addition, complete Energy & Atmosphere credits submission with backup documentation. Prepare the final presentation to the client and include LEED v4.1 substitution and the [SDGs](#) related to the class project.
- **Indoor Environmental Quality and Sustainable Site team;** Present strategies and technologies used for the site management including landscape, rainwater, heat island, lighting, and the IEQ including approach, tools, and skills needed. In addition, complete IEQ and Site credits submission with backup documentation. Prepare final presentation to the client and include LEED v4.1 substitution and the [SDGs](#) related to the class project.
- **Water Efficiency and Transportation team;** Present on strategies and technologies used for water efficiency inside and outside the building and transportation including tools, approach, and skills needed. Also, complete Water Efficiency and Transportation submission with backup documentation. Prepare final presentation to the client and include any LEED v4.1 substitution and report of the [SDGs](#) related to the class project.
- **Material & Resources, Innovation and Regional Priority team;** Present strategies and technologies used for material selection, approach, skills, and tools needed. Also, complete Material and Resources credits submission with backup documentation. Prepare final presentation to the client and include LEED v4.1 substitution and report of the [SDGs](#) related to the class project.

Team/Project Manager's responsibilities:

- Lead the discussion in the breakout sessions that covers LEED, net-zero energy and SDGs
- Ensure the weekly PowerPoint presentation is completed for each module and submitted on time.
- Manage and update the LEED checklist, credits, and prerequisites documents and upload them to Canvas.

Assignments and Grading

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

<i>Grading Category</i>	<i>Additional Details</i>	<i>Points</i>
Attendance	Required. Two points related to attending the SBE GBLC on October 17, 2024	5
Readings (Individual)	Readings, and checklist assessment (points vary) (0-15) <ul style="list-style-type: none"> Weekly & Module-Based 	15
Discussion (Individual)	Discussions (points vary) (0-15) <ul style="list-style-type: none"> Weekly & Module-Based 	15
Presentations (Team)	PowerPoint presentation (points vary) (0-15) <ul style="list-style-type: none"> Weekly & Module-Based 	15
Exams	<ul style="list-style-type: none"> Mid-term (15) Final (15) 	30
Final Project	Final Class Presentation including UN SDGs and Net-Zero Energy Building. <i>Graduate students include a mixed methods analysis report of findings.</i>	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.

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx> .

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

Expectations

- 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.
- Students attend class prepared for active participation and discussion. A quality learning experience in this course relies heavily on interaction and exchange of ideas related to the sustainable built environment.
- Students should plan to bring their computers to every class for coursework.
- 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.

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.)

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/checklist-leed-v4-building-design-and-construction>
- 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 candidate's handbook, <https://www.usgbc.org/resources?Credentialing+resources=%5B%22Candidate+Handbooks%22%5D>
- LEED GA exam, <https://www.usgbc.org/articles/prepare-your-leed-green-associate-exam>
- https://www.usgbc.org/sites/default/files/LEED%20v4%20BDC_07.25.19_current.pdf
- 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
- Zero Energy Home Ready program, <https://www.energy.gov/eere/buildings/zero-energy-ready-home-program>
- Office of Energy Efficiency & Renewable Energy, <https://www.energy.gov/eere/office-energy-efficiency-renewable-energy>
- U.S. Department of Energy, Building science education Series, <https://www.solardecathlon.gov/building-science.html>
- U.S. Department of Energy, Solar Decathlon, <https://www.solardecathlon.gov/education-resources.html>

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, computing policies, and more.

Fall 2024 Career Showcase Dates

UF Career Showcase at Stephen C. O'Connell Center, September 25th -27th, [Fall 2024 Career Week – Career Connections Center University of Florida \(ufl.edu\)](https://www.usgbc.org/resources?LEED+Resources=%5B%22Calculators%22%5D)

DCP Career Showcase at Stephen C. O'Connell Center, September 10th and 11th, [DCP Career Resource – UF College of Design, Construction and Planning \(ufl.edu\)](https://www.usgbc.org/resources?LEED+Resources=%5B%22Calculators%22%5D)

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 explained within Canvas and may be subject to change. In Canvas, each module is organized per date what is expected from the students before the class, during the class, and after the class. All links to readings, tools, and resources listed on Canvas and all assignments are linked within each module for easy access.

Below is a summary of the course. Again, On Canvas, each module is developed with details including module learning objectives and SLOs, what to do before, during and after class, readings, assignments, discussions, quizzes, weekly presentations, weekly guest speakers, and final project with rubrics.

Weekly Class Schedule

Date	Topics
Module 0: Course Overview	
TH, 8/22	<ul style="list-style-type: none"> - Welcome & Introduction - Review syllabus, course resources, UF resources and policies - Review use of Canvas, course files, material, and paperless approach - Review green building rating systems including: <ul style="list-style-type: none"> • Green Glob • BREAM • ASHRAE 189 • Living Building Challenge • International Green Construction Code (IGCC) • Florida Green Building Coalition (FGBC) • WELL Building Standards <ul style="list-style-type: none"> ○ International WELL Building Institute (IWBI) ○ WELL V2 checklist
	<ul style="list-style-type: none"> - UF campus sustainability overview and status <ul style="list-style-type: none"> • 99 + LEED certified Buildings on campus • UF Office of Sustainability - Introduction to United Nations Sustainable Development Goals, UN SDGs - UN SDGs 2021 report; global, US, and other regions of the world - US State Sustainable Development Report 2021 - DOE Building Science Education Series - U.S. Department of Energy, Solar Decathlon, https://www.solardecathlon.gov/education-resources.html <p>Teams</p> <ul style="list-style-type: none"> - Divide the class into teams <ul style="list-style-type: none"> • Identify project team managers (rotating every 2 weeks), members, roles & responsibilities, semester schedule for each team by the team and post it on team's Canvas page • Navigate GATORCLOUD, use it as a free resource

Module 1: Introduction to Green Building/LEED & Net-Zero Energy Buildings

<p>T, 8/27</p>	<p>➤ Instructor’s presentation on the module</p> <p>Reading:</p> <ul style="list-style-type: none"> - Introduction to LEED rating system and Green Buildings <ul style="list-style-type: none"> • U.S. Green Building Council (USGBC) • Green Business Certificate Inc. (GBCI) • DOE Building Science Education Series - Introduction to alignment within the rating systems and main resources: <ul style="list-style-type: none"> • Leadership in Energy and Environmental Design (LEEDV4) <ul style="list-style-type: none"> ○ Its application to the built environment ○ https://www.usgbc.org/search ○ LEED V4, LEED V4 checklist
	<ul style="list-style-type: none"> ○ LEED V4.1 • UN SDGs • WELL Building Standards and LEED and UN SDGs • LEED™ v4.0 and WELL v2 crosswalk tool (Equivalent or Aligned), • WELLv2 crosswalk in general • LEED User, https://leeduser.buildinggreen.com/uf • GSA, General Services Administration, sustainability and building decarbonization • Building Green, https://www.buildinggreen.com/ <p>Establish USGBC Account, https://www.usgbc.org/registration/create-user</p>
<p>TH, 8/29</p>	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews and discuss the module topics - Each team develops a PowerPoint presentation summarizing the module and the intent of the rating systems, DOE programs, and UN SDGs.
	<p><i>Guest Speaker: UF Climate Action Plan Coordinator</i></p>
	<p><i>Assignment #1, reading summary (individual assignment)</i></p> <p><i>Assignment #1, discussion on Canvas (individual assignment)</i></p> <p><i>Assignment #1, PowerPoint presentation summarizing the module (team assignment)</i></p>

Module 2: Introduction to the class project

<p>T, 9/3</p>	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module <p>Reading links on Canvas:</p> <ul style="list-style-type: none"> - Introduction to DCP Collaboratory, class project <ul style="list-style-type: none"> • Review project program development, Owner’s Project Requirement (OPR), and Basis of Design (BOD) • Building drawings; Civil, Landscape, architectural and MEP and specification -How to start a LEED project <ul style="list-style-type: none"> • Identify key strategies the project team should consider to project goals • Integrative process and Design Charrette • Getting Started • Rating system selection • Assess LEED™ V4.0 checklist and identify substitution credits with LEED™ V4.1 and the class project including: <ul style="list-style-type: none"> • Calculate occupancy, Full time equivalent (FTE), parttime, transient, and peak occupancy • Establish LEED boundary, use Google Earth or ArcGIS • Assess Minimum Program Requirements (MPR) and Pre-requisites • Introduction to LEED online • Register LEED project - Review DOE Net-Zero components and application to the project <p>Tools:</p> <ul style="list-style-type: none"> • ArcGIS or Google Earth • LEEDuser • LEED v4.0 • LEED V4.1 • LEEDonline.com • DOE Building Science
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Guest Speaker: PDC Construction Sustainability Coordinator

<p>TH, 9/5</p>	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements - Review LEED v4 checklist for the class project - How to develop backup documentations - Each team develops a PowerPoint presentation summarizing the module, identify the project elements and application of LEED, DOE Net-Zero and related SDGs
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Assignment #2, reading summary (individual assignment)
Assignment #2, discussion on Canvas module (individual assignment)
Assignment #2, PowerPoint presentation summarizing the module (team assignment)
Module learning assessment via Poll questions on Zoom

Module 3: Location and Transportation (L&T)

T, 9/10	<p>➤ Instructor's presentation on the module</p> <p>Reading links on Canvas:</p> <ul style="list-style-type: none"> - Location & Transportation overview - Strategies used for the site selection, density, and transportation options - Neighborhood Development Location, parking, and pedestrian access - Green Vehicles - Building Civil drawings and specification - Complete requirements for L&T <p>Tools:</p> <ul style="list-style-type: none"> - ArcGIS or Google Earth - Walk Score - LEEDuser - Arc - LEED v4.0 reference guide for L&T assessment - LEED V4.1 - LEEDonline.com - DOE Building Science
Guest Speaker: Collaboratory Architect/Designer	
TH, 9/12	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify and discuss key strategies the project team should consider meeting requirements for L&T - Review LEED v4 checklist, L&T for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
<p>Assignment #3, reading summary (individual assignment) Assignment #3, discussion on Canvas module (individual assignment) Assignment #3, PowerPoint presentation summarizing the module (team assignment) Module learning assessment via Poll questions on Zoom</p>	

Module 4: Sustainable Site (SS) Approach

T, 9/17

➤ Instructor's presentation on the module

Reading links on Canvas module:

- Site assessment, development, and open spaces
- Landscape
- Green roof
- Rainwater management
- Heat island effect
- Outdoor light pollution
- Building Civil and landscape drawings and specification
- **Complete requirements for SS**

Tools:

- ArcGIS or [Google Earth](#)
- [LEEDuser](#)
- [LEED v4.0](#) reference guide for SS assessment
- [LEED V4.1](#)
- [LEEDonline.com](#)
- [DOE Building Science](#)

Guest Speaker: Collaboratory Landscape Architect/Designer

TH, 9/19

In class breakout session:

- Each team reviews the module topics
- Identify and discuss key strategies the project team should consider meeting requirements for SS
- Review [LEED v4 checklist](#), SS for the class project
- Develop backup documentations for credits attempted
- **Each team develops a PowerPoint presentation** summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module

Assignment #4, reading summary on Canvas module and heat island effect reduction calculation (individual assignment)

Assignment #4, discussion on Canvas module (individual assignment)

Assignment #4, PowerPoint presentation summarizing the module (team assignment)

Module learning assessment via Poll questions on Zoom

Module 5: Water Efficiency (WE) strategies

T, 9/24

➤ Instructor's presentation on the module

Reading links on Canvas module:

- Water conservation overview
- Indoor and outdoor water conservation strategies and technologies
- Water use assessment, reduce demand, apply strategies to decrease consumption
- Net zero water
- Building MEP drawings and specification (Plumbing only)
- **Complete requirements for WE**

Introduction to BIM (Building Information Modeling)

Tools:

- [Indoor water use reduction calculator](#)

	<ul style="list-style-type: none"> - Outdoor water use reductio calculator - Ecomedes - LEEDuser - Arc - LEED v4.0 reference guide and checklist for WE assessment - LEED V4.1 - LEEDonline.com - DOE Building Science
TH, 9/26	<p>Apply BIM (Building Information Modeling) to a project.</p> <p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify and discuss key strategies the project team should consider meeting requirements for WE - Review LEED v4 checklist, WE for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module <p><i>Assignment #5, reading summary on Canvas module and Indoor & out water use reduction calculations and Ecomedes with ROI example for one flow and one flush fixture (individual assignment)</i></p> <p><i>Assignment #5, discussion on Canvas module (individual assignment)</i></p> <p><i>Assignment #5, PowerPoint presentation summarizing the module (team assignment)</i></p> <p><i>Module learning assessment via Poll questions on Zoom</i></p>
<h2 style="text-align: center; margin: 0;">Module 6: Energy & Atmosphere (EA), Building Systems, and Net Zero Energy</h2>	
T, 10/1	<ul style="list-style-type: none"> ➤ Instructor's presentation on the module <p>Reading links on Canvas module:</p> <ul style="list-style-type: none"> - Energy conservation overview - Energy efficiency and conservation strategies - Energy modeling, ASHRAE 90.1 - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 1: Building and Energy - Building MEP drawings and specification (mechanical and lighting only) - Complete requirements for EA <p>Tools:</p> <ul style="list-style-type: none"> - Energy Star Portfolio Manager - LEEDuser - Arc - LEED v4.0 reference guide and checklist for EA assessment - LEED V4.1 - LEEDonline.com - DOE Building Science

	<i>Guest Speaker: Ecomedes</i>
TH, 10/3	<ul style="list-style-type: none"> ➤ Instructor's presentation on the module <p>Introduction to the zero energy Buildings</p> <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 2: Zero Energy Buildings <p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Review DOE building and energy - Identify and discuss key strategies the project team should consider for energy conservation - Review LEED v4 checklist, EA for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
	<p><i>Assignment #6, complete Energy Star Portfolio Manager for the class project (individual assignment)</i></p> <p><i>Assignment #6, discussion on Canvas module (individual assignment)</i></p> <p><i>Assignment #6, PowerPoint presentation summarizing the module (team assignment)</i></p> <p><i>Module learning assessment via Poll questions on Zoom</i></p>

Mid-term exam, October 4, 2024

Module 7: Building Systems and Commissioning

T, 10/8	<ul style="list-style-type: none"> ➤ Instructor's presentation on the module <p>Reading links on Canvas module:</p> <p>Introduction to the zero energy Buildings</p> <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 3: Building Envelop - Building envelopes design and specification. - Building envelopes commissioning - Building architecture drawings - <i>Complete requirements for EA</i> <p>Tools:</p> <ul style="list-style-type: none"> - Energy Star Target Finder - LEEDuser - LEED v4.0 - LEED V4.1 - LEEDonline.com
TH, 10/10	<ul style="list-style-type: none"> ➤ Instructor's presentation on the module <p>Introduction to the zero energy Buildings</p> <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 4: HVAC Systems - HVAC drawing and specification

	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for optimized building HVAC - Review LEED v4 checklist, EA for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
	<p><i>Guest Speaker: Commissioning Envelop, MEP</i></p>
	<p><i>Assignment #7, complete Energy Star Target Finder for the class project (individual assignment)</i></p> <p><i>Assignment #7, discussion on Canvas module (individual assignment)</i></p> <p><i>Assignment #7, PowerPoint presentation summarizing the module (team assignment)</i></p> <p><i>Module learning assessment via Poll questions on Zoom</i></p>

Module 8: Building Systems and Commissioning (Cont.)

<p>T, 10/15</p>	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module <p>Reading links on Canvas module:</p> <p>Introduction to Net- Zero Energy Buildings</p> <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 5: Lighting Systems - Lighting design and specification inside and outside - Lighting audit and commissioning - <i>Building MEP drawings and specification (mechanical and lighting only)</i> - <i>Complete requirements for EA</i> <p>Tools:</p> <ul style="list-style-type: none"> - Energy Star Portfolio Manager - LEEDuser - LEED v4.0 reference guide and checklist for EA assessment - LEED V4.1 - LEEDonline.com
	<p><i>Guest Speaker: Collaboratory Contractor</i></p>
<p>TH, 10/17</p>	<ul style="list-style-type: none"> ➤ Instructor’s presentation on the module <p>Introduction to the zero energy Buildings</p> <ul style="list-style-type: none"> - DOE Building Science Education <ul style="list-style-type: none"> ○ Module 6: Plug and Process Load - Building plug load review and specification - Review energy modeling for plug load <p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for plug load - Review LEED v4 checklist, EA for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module

Assignment #8, assessment and calculations for lighting results from Ecomedes (individual assignment)
Assignment #8, discussion on Canvas module (individual assignment)
Assignment #8, PowerPoint presentation summarizing the module (team assignment)
Module learning assessment via Poll questions on Zoom



Green Building Learning Collaborative (GBLC) program & Reception is highly recommended for this course and is scheduled for Thursday, **October 17, 2024, at 4:30-6:30 pm** at the Gallery at the [Architecture building](#).

Module 9: Commissioning and Renewable Energy

T, 10/22

- **Instructor’s presentation on the module Reading links on Canvas module:**
- Introduction to the zero energy Buildings**
 - DOE Building Science Education
 - [Module 8: Renewable Energy and Net Zero Energy Building](#)
 - Renewable energy types, PV for the project
 - Review drawings and specification for renewable energy for class project
 - Renewable energy and commissioning
 - Building MEP drawings and specification
 - **Complete requirements for EA**
- Tools:**
 - [HelioScope](#)
 - [LEEDuser](#)
 - [LEED v4.0](#) reference guide
 - [LEED V4.1](#)
 - [LEEDonline.com](#)

Guest Speaker: Renewable energy, Moss

TH, 10/24

- In class breakout session:**
- Each team reviews the module topics
 - Identify key strategies the project team should consider for the class project based on the project goals
 - Review [LEED v4 checklist](#), EA for the class project
 - Develop backup documentations for credits attempted
 - **Each team develops a PowerPoint presentation** summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module

Assignment #9, HelioScope design with ROI for class project (individual assignment)
Assignment #9, discussion on Canvas module (individual assignment)
Assignment #9, PowerPoint presentation summarizing the module (team assignment)
Module learning assessment via Poll questions on Zoom

Graduate students to complete an in-depth the Collaboratory energy modeling output, renewable energy assessment, needs, installation, cost, and Return on Investment (ROI) for Photovoltaic installation.

Module 10: Materials and Resources (MR)

T, 10/29

➤ **Instructor's presentation on the module**

Reading links on Canvas module:

- Material use overview.
- Material specification considering post and pre consumer content, EPD and HPD
- Construction and demolition waste management planning
- Design for deconstruction
- Material life cycle
- **Complete requirements for MR**

Tools:

- [Material Calculator](#)
- [LEEDuser](#)
- [LEED v4.0](#) reference guide
- [LEED V4.1](#)
- [LEEDonline.com](#)

Guest Speaker: Siemens, ESCO

TH,
10/31

In class breakout session:

- Each team reviews the module topics
- Identify key strategies the project team should consider for the class project based on the project goals
- Review [LEED v4 checklist](#), MR for the class project
- Develop backup documentations for credits attempted
- **Each team develops a PowerPoint presentation** summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module

Assignment #10, Develop construction waste management plan (individual assignment)

Assignment #10, discussion on Canvas module (individual assignment)

Assignment #10, PowerPoint presentation summarizing the module (team assignment)

Module learning assessment via Poll questions on Zoom

Module 11: Indoor Environmental Quality (IEQ)

T, 11/5

➤ **Instructor's presentation on the module**

Reading links on Canvas module:

- Strategies for healthy building
- ASHREA 62.1, ventilation
- ASHREA 55, thermal comfort
- Acoustic, daylight, views
- Low emitting materials
- Air quality management during construction
- Building MEP drawings (mechanical)
- **Complete requirements for IEQ**

Tools:

- [LEEDuser](#)
- [Arc](#)
- [LEED v4.0](#) reference guide and checklist for IEQ assessment
- [LEEDonline.com](#)
- Canvas team page for organizing the backup documentation for IEQ

LEED project field trip, Malachowsky Hall for Data Science & Information Technology

TH,11/7	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics
	<ul style="list-style-type: none"> - Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements - Review LEED v4 checklist, IEQ for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identify approaches & strategies used, tools & skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module
	<p><i>Assignment #11, Develop IEQ plan during construction (individual assignment)</i> <i>Assignment #11, discussion on Canvas module (individual assignment)</i> <i>Assignment #11, PowerPoint presentation summarizing the module (team assignment)</i> <i>Module learning assessment via Poll questions on Zoom</i></p>

Module 12: Innovation and Regional Priority (RP)

T, 11/12	<p>➤ Instructor’s presentation on the module</p> <p>Reading links on Canvas module:</p> <ul style="list-style-type: none"> - Strategies for innovative approach - Pilot credits - Exemplary performance - Complete requirements for Innovation and RP
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Guest Speaker: Upper management and sustainability initiatives, Siemens

TH, 11/14	<p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements - Review LEED v4 checklist, Innovation and RP for the class project - Develop backup documentations for credits attempted - Each team develops a PowerPoint presentation summarizing the module, identifying approaches & strategies used, tools & skills learned. Reflection on the semester
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Module 13: LEED Exam Review

T, 11/19	<p>Reading links on Canvas module:</p> <ul style="list-style-type: none"> - Review GA exam registration - Prepare for LEED GA Exam - LEED v4 Green Associate Candidate Handbook - Guide to the LEED Green Associate V4 Exam from UF Library - Continuing education for credential maintenance - Practice samples of the 100 questions for the LEED GA exam <p>In class breakout session:</p> <ul style="list-style-type: none"> - Each team reviews the module topics - Identify key strategies to prepare for the LEED GA exam - Practice LEED GA exam registration <p>Review DOE Building Science Education Series</p> <ul style="list-style-type: none"> - Module 7, Additional/Optional Resources
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Module 14: Review class project

TH, 11/21

Each team reviews:

- The module topics
- Reflect on the LEED process for the class project and application Net Zero Energy Building
- Review the tools used
- Review the skills learned
- Review the LEED project administration process
- [Crosswalk LEED and synergies](#)
- Review UN SDGs applied
- Review [DOE Net Zero Energy Building](#)
- Each team review the semester long cumulative presentation and drive a simplified presentation for the final presentation **w/o the details and step by step credits approach**

In class breakout session:

- Each team reviews the final presentation
- Each team list the tools and skills learned
- **Practice the final presentation**

Final exam, November 22, 2024

Thanksgiving Holiday, 11/25- 11/29

Module 15: Final presentation

T, 12/3

The final presentation to the Building Owner, occupants, and other campus stakeholders. This presentation is a simplified version of the semester long weekly cumulative PowerPoint (simplified to address each category's approaches, strategies, technologies, Net-Zero Building, and UN SDGs. In addition, each team makes a case on why use "LEED Building Standards and pursue Net Zero Energy Building".

Graduate students will be required to complete an in-depth report on the implementation of one of the following:

➤ ***LEED Rating System Analysis:***

One LEED Category based on the project documentation used. This report will include the following components:

- ***In depth gap analysis for achieving LEED Certification for one category (ex. Energy)***
- ***Proposed implementation plan based on current state conditions (cost considerations, proposed phasing, return on investment)***
- ***Inferential analysis of one LEED Category (e.g., Energy, Water, Materials, etc.)***

In addition, each team will present a pitch to the class/attendees on why "LEED Building Standards" using 3MT presentation approach and guidelines. [UF 3MT resources.](#)

- ***DOE Building Science application to the built environment, identify opportunities, challenges, and make recommendations for UF projects to get to Zero Energy buildings.***
 - In depth analysis of the building science application and integration into the class project
 - Identify strategies and technologies to be applied to Collaboratory to get to net zero energy.
 - Analyze UF's standards and identify strategies and technologies to be used to apply to all UF projects to get to net zero.
 - Identify challenges and make recommendations for campus projects to get to net zero.

In addition, each team will present a pitch to the class/attendees on why “Net Zero energy Buildings” using 3MT presentation approach and guidelines. [UF 3MT resources](#).

Getting Help

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu / or 352 392-1575, a team member will reach out to the student.

Counseling and Wellness Center: 392-1575; and the

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department, 392-1111 (or 9-1-1 for emergencies). <https://police.ufl.edu/>

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu, <https://elearning.ufl.edu/>

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/>

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-resuL&Ts/>.

Students with Disabilities:

Students requesting accommodation for disabilities must first register with the Disability Resource Center (DRC). The DRC coordinates the needed accommodations for 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. Accommodation is 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 at 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 accommodation can be provided.

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.