

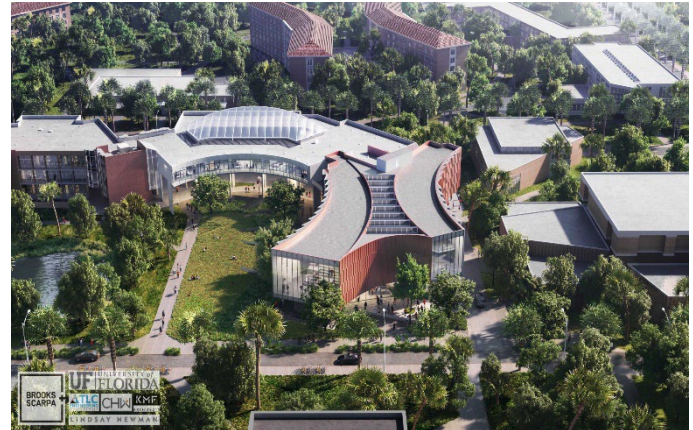
**DCP4214 | Class 11851 | Section 323G | 6 Credits**  
**Green Building Strategies (LEED Lab)**  
**|Spring 2024|**

<b>Instructor:</b>	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
<b>Office Correspondence:</b>	352.294.1428   Canvas email (preferred)   <a href="mailto:barmagh@ufl.edu">barmagh@ufl.edu</a> (alternative)
<b>Course Time &amp; Location:</b>	Tuesdays   Period 6-8   12:50 – 3:50   Architecture Building, Room 411 Thursdays   Period 6-8   12:50 – 3:50   Architecture Building, Room 411
<b>Course Co/Prerequisite:</b>	DCP3210 (or) another course in the topic area and approved by the instructor
<b>Final Exam Schedule:</b>	N/A
<b>Office hours:</b>	Tuesdays   8:30-10:30 am   Thursdays   8:30-10:30 am   Or By appointment Architecture Building, Room 446
<b>Course Website:</b>	<a href="https://ufl.instructure.com/courses/486845">https://ufl.instructure.com/courses/486845</a> for modules, announcements, assignments, discussions, lecture slides, readings, quizzes, and grades

### 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, LEED™ V4 for New Construction and Major Renovation will be applied to the DCP Collaboratory project, with introduction to the DOE Zero Energy Buildings design approach, benefits, and needs for teaching and research.

### Class project, UF-653- DCP Collaboratory



## Course Description

This is an interactive 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 continue through operation and building life 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) exams. In addition, this semester the course will apply the Department of Energy Zero energy design strategies that will cover the tools and skills needed to prepare the students for net-zero emission economy by 2050.

## 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 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 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.
- Assess the value 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/486845>
- Students expected to complete readings and watch videos assigned as advance preparation for class discussion.

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## Class Project

This semester, the class will be working on DCP Collaboratory, new building/project on campus. This project is in the design phase.

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 during the semester.

Each team will develop a PowerPoint presentation at the end of each module with integrated SDGs related to the module topic and net zero energy buildings, this will become a cumulative presentation for the end of the semester.

Each team will present a simplified 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/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.**

- **Energy Efficiency team:** Present strategies and technologies for net zero energy building including types of energy, envelope, HAVC system, lighting, plug load, commissioning, and tools & skills needed. In addition, complete Energy & Atmosphere credits submission with backup documentations. 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 documentations. 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;** Report 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 documentations. 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 team;** Present strategies and technologies used for material selection, approach, skills, and tools needed. Also, complete Material and Resources credits submission with backup documentations. 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 under assignments.
- Manage and update the LEED checklist, credits, and prerequisites documents and upload 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>
<b>Attendance</b>	Required. Two points related to attending the SBE GBLC on February 21, 2024	5
<b>Readings (Individual)</b>	Readings, and checklist assessment (points vary) (0-15) <ul style="list-style-type: none"> <li>Weekly &amp; Module-Based</li> </ul>	15
<b>Discussion (Individual)</b>	Discussions (points vary) (0-15) <ul style="list-style-type: none"> <li>Weekly &amp; Module-Based</li> </ul>	15
<b>Presentations (Team)</b>	PowerPoint presentation (points vary) (0-15) <ul style="list-style-type: none"> <li>Weekly &amp; Module-Based</li> </ul>	15
<b>Exams</b>	<ul style="list-style-type: none"> <li>Mid-term (15)</li> <li>Final (15)</li> </ul>	30
<b>Final Project</b>	Final Class Presentation including UN SDGs and Net-Zero Energy Building	20
	<b>Total</b>	<b>100</b>

## 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 multiperiod day of class will count as multiple absences in accordance with the number of periods).
- 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.
- 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.)

- Plagiarism** and/or academic misconduct and consequences of committing such behavior.
  - <https://www.youtube.com/watch?v=PzZsButRaHs>
  - <https://www.youtube.com/watch?v=GW3BzAG8aaY>

In addition to the required reading, various supplemental, free publications identified for class discussion and/or assignments supplied via the UF Canvas e-Learning portal (<https://lss.at.ufl.edu/>) and are listed below under other resources.

## 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](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](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](http://www.usgbc.org)
- LEED User, *UF membership access* | [www.leeduser.buildinggreen.com](http://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.



## 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.
- 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.

## 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 for 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, and final project with rubrics.*

## Weekly Class Schedule

Date	Topics
<b>Module 0: Course Overview</b>	
T, 1/9	- 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"> <li>• <a href="#">Green Glob</a></li> <li>• <a href="#">BREAM</a></li> <li>• <a href="#">ASHRAE 189</a></li> <li>• <a href="#">Living Building Challenge</a></li> <li>• <a href="#">International Green Construction Code (IGCC)</a></li> <li>• <a href="#">Florida Green Building Coalition (FGBC)</a></li> <li>• <a href="#">WELL Building Standards</a> <ul style="list-style-type: none"> <li>○ <a href="#">International WELL Building Institute (IWBI)</a></li> <li>○ <a href="#">WELL V2 checklist</a></li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>- UF campus sustainability overview and status <ul style="list-style-type: none"> <li>• <a href="#">95 + LEED certified Buildings on campus</a></li> <li>• <a href="#">UF Office of Sustainability</a></li> </ul> </li> <li>- Introduction to <a href="#">United Nations Sustainable Development Goals, UN SDGs</a></li> <li>- UN <a href="#">SDGs 2021 report: global, US, and other regions of the world</a></li> <li>- <a href="#">US State Sustainable Development Report 2021</a></li> <li>- <a href="#">DOE Building Science Education Series</a></li> <li>- U.S. Department of Energy, Solar Decathlon, <a href="https://www.solardecathlon.gov/education-resources.html">https://www.solardecathlon.gov/education-resources.html</a></li> </ul> <p><b>Teams</b></p> <ul style="list-style-type: none"> <li>- Divide the class into teams <ul style="list-style-type: none"> <li>• Identify project team managers (rotating every 2 weeks), members, roles &amp; responsibilities, semester schedule for each team by the team and post it on team's Canvas page</li> <li>• Navigate <a href="#">GATORCLOUD</a>, use it as a free resource</li> </ul> </li> </ul>
TH, 1/11	<p><b>In class breakout session:</b></p> <ul style="list-style-type: none"> <li>- Each team review the module topics</li> <li>- Each team to assign rotating biweekly project manager</li> <li>- Review and rewrite your resume</li> </ul> <p>- <a href="https://career.ufl.edu/events-and-programs/career-fairs/">https://career.ufl.edu/events-and-programs/career-fairs/</a></p> <p><b>2024 Spring Career Showcase Dates</b></p> <ul style="list-style-type: none"> <li>• <b>Monday January 29<sup>th</sup> Computer &amp; Information Science &amp; Engineering and Artificial Intelligence Fair</b>, 1pm – 6pm Stephen C. O’Connell Center</li> <li>• <b>Tuesday January 30<sup>th</sup> Non-Technical Day</b>, 9am – 3pm Stephen C. O’Connell Center</li> <li>• <b>Tuesday January 30<sup>th</sup> Diversity Meet-Up</b>, 5pm – 7pm UF Reitz Union</li> <li>• <b>Wednesday January 31<sup>st</sup> Technical Day</b>, 9am – 3pm Stephen C. O’Connell Center</li> </ul> <p>- <b>DCP 2024 Career Fair</b>, <a href="#">DCP Career Resource – UF College of Design, Construction and Planning (ufl.edu)</a></p> <p>- Create <a href="#">digital portfolio on Google</a></p>
<b>Module 1: Introduction to Green Building/LEED &amp; Net-Zero Energy Buildings</b>	
T, 1/16	<p>➤ Instructor’s presentation on the module</p> <p><b>Reading:</b></p> <ul style="list-style-type: none"> <li>- Introduction to <a href="#">LEED rating system</a> and Green Buildings <ul style="list-style-type: none"> <li>• <a href="#">U.S. Green Building Council</a> (USGBC)</li> <li>• <a href="#">Green Business Certificate Inc.</a> (GBCI)</li> <li>• <a href="#">DOE Building Science Education Series</a></li> </ul> </li> <li>- Introduction to alignment within the rating systems and main resources: <ul style="list-style-type: none"> <li>• <a href="#">Leadership in Energy and Environmental Design (LEEDV4)</a> <ul style="list-style-type: none"> <li>○ Its application to the built environment</li> <li>○ <a href="https://www.usgbc.org/search">https://www.usgbc.org/search</a></li> <li>○ <a href="#">LEED V4, LEED V4 checklist</a></li> </ul> </li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>○ <a href="#">LEED V4.1</a></li> <li>● <a href="#">UN SDGs</a></li> <li>● <a href="#">WELL Building Standards and LEED and UN SDGs</a></li> <li>● <a href="#">LEED™ v4.0 and WELL v2 crosswalk tool (Equivalent or Aligned)</a>,</li> <li>● <a href="#">WELLv2 crosswalk</a> in general</li> <li>● LEED User, <a href="https://leeduser.buildinggreen.com/uf">https://leeduser.buildinggreen.com/uf</a></li> <li>● <a href="#">GSA, General Services Administration, sustainability and building decarbonization</a></li> <li>● Building Green, <a href="https://www.buildinggreen.com/">https://www.buildinggreen.com/</a></li> </ul> <p><b><a href="https://www.usgbc.org/registration/create-user">Establish USGBC Account</a></b>, <a href="https://www.usgbc.org/registration/create-user">https://www.usgbc.org/registration/create-user</a></p>
TH, 1/18	<p><b>In class breakout session:</b></p> <ul style="list-style-type: none"> <li>- Each team reviews and discuss the module topics</li> <li>- <b>Each team develops a PowerPoint presentation</b> summarizing the module and the intent of the rating systems, DOE programs, and UN SDGs.</li> </ul>
<p><b><i>Guest Speaker: UF Climate Action Plan Coordinator</i></b></p> <p><i>Assignment #1, reading summary (individual assignment)</i>  <i>Assignment #1, discussion on Canvas (individual assignment)</i>  <i>Assignment #1, PowerPoint presentation summarizing the module (team assignment)</i></p>	
<p><b>Module 2: Introduction to the class project</b></p>	
T, 1/23	<ul style="list-style-type: none"> <li>➤ Instructor’s presentation on the module</li> </ul> <p><b>Reading links on Canvas:</b></p> <ul style="list-style-type: none"> <li>- Introduction to DCP Collaboratory, class project             <ul style="list-style-type: none"> <li>● Review project program development, Owner’s Project Requirement (OPR), and Basis of Design (BOD)</li> <li>● Building drawings; Civil, Landscape, architectural and MEP and specification</li> </ul> </li> <li>-How to start a LEED project             <ul style="list-style-type: none"> <li>● Identify key strategies the project team should consider to project goals</li> <li>● Integrative process and Design Charrette</li> <li>● Getting Started</li> <li>● Rating system selection</li> <li>● Assess <a href="#">LEED™ V4.0 checklist</a> and identify substitution credits with <a href="#">LEED™ V4.1</a> and the class project including:                 <ul style="list-style-type: none"> <li>● Calculate occupancy, Full time equivalent (FTE), parttime, transient, peak</li> <li>● Establish LEED boundary, use <a href="#">Google Earth</a> or ArcGIS</li> <li>● Assess Minimum Program Requirements (MPR) and Pre-requisites</li> <li>● Introduction to <a href="#">LEED online</a></li> <li>● Register LEED project</li> </ul> </li> </ul> </li> <li>- Review <a href="#">DOE Net-Zero</a> components and application to the project</li> </ul> <p><b>Tools:</b></p> <ul style="list-style-type: none"> <li>● ArcGIS or <a href="#">Google Earth</a></li> <li>● <a href="#">LEEDuser</a></li> <li>● <a href="#">LEED v4.0</a></li> <li>● <a href="#">LEED V4.1</a></li> <li>● <a href="#">LEEDonline.com</a></li> <li>● <a href="#">DOE Building Science</a></li> </ul>
<p><b><i>Guest Speaker: PDC Construction Sustainability Coordinator</i></b></p>	
TH, 1/25	<p><b>In class breakout session:</b></p>

	<ul style="list-style-type: none"> <li>- Each team reviews the module topics</li> <li>- Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements</li> <li>- Review <a href="#">LEED v4 checklist</a> for the class project</li> <li>- How to develop backup documentations</li> <li>- <b>Each team develops a PowerPoint presentation</b> summarizing the module, identify the project elements and application of LEED, DOE Net-Zero and related SDGs</li> </ul>
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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 3: Location and Transportation (L&T)**

T, 1/30	<p>➤ Instructor’s presentation on the module</p> <p><b>Reading links on Canvas:</b></p> <ul style="list-style-type: none"> <li>- Location &amp; Transportation overview</li> <li>- Strategies used for the site selection, density, and transportation options</li> <li>- Neighborhood Development Location, parking, and pedestrian access</li> <li>- Green Vehicles</li> <li>- Building Civil drawings and specification</li> <li>- <b>Complete requirements for L&amp;T</b></li> </ul> <p><b>Tools:</b></p> <ul style="list-style-type: none"> <li>- ArcGIS or <a href="#">Google Earth</a></li> <li>- <a href="#">Walk Score</a></li> <li>- <a href="#">LEEDuser</a></li> <li>- <a href="#">Arc</a></li> <li>- <a href="#">LEED v4.0</a> reference guide for L&amp;T assessment</li> <li>- <a href="#">LEED V4.1</a></li> <li>- <a href="#">LEEDonline.com</a></li> <li>- <a href="#">DOE Building Science</a></li> </ul>
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**Guest Speaker: Collaboratory Architect/Designer**

TH, 2/1	<p><b>In class breakout session:</b></p> <ul style="list-style-type: none"> <li>- Each team reviews the module topics</li> <li>- Identify and discuss key strategies the project team should consider meeting requirements for L&amp;T</li> <li>- Review <a href="#">LEED v4 checklist</a>, L&amp;T for the class project</li> <li>- Develop backup documentations for credits attempted</li> <li>- <b>Each team develops a PowerPoint presentation</b> summarizing the module, identify approaches &amp; strategies used, tools &amp; skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module</li> </ul>
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*Assignment #3, reading summary (individual assignment)*  
*Assignment #3, discussion on Canvas module (individual assignment)*  
*Assignment #3, PowerPoint presentation summarizing the module (team assignment)*

## Module 4: Sustainable Site (SS) Approach

T, 2/6

➤ 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, 2/8

### 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 5: Water Efficiency (WE) strategies

T, 2/13

➤ 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**

### Tools:

- [Indoor water use reduction calculator](#)

- [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](#)

**Guest Speaker: Ecomedes**

- TH, 2/15 **In class breakout session:**
- 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

*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)*

*Assignment #5, discussion on Canvas module (individual assignment)*

*Assignment #5, PowerPoint presentation summarizing the module (team assignment)*

**Module 6: Energy & Atmosphere (EA), Building Systems, and Net Zero Energy**

- T, 2/20
- **Instructor’s presentation on the module**
- Reading links on Canvas module:**
- Energy conservation overview
  - Energy efficiency and conservation strategies
  - Energy modeling, ASHRAE 90.1
  - DOE Building Science Education
    - [Module 1: Building and Energy](#)
  - *Building MEP drawings and specification (mechanical and lighting only)*
  - *Complete requirements for EA*
- Tools:**
- [Energy Star Portfolio Manager](#)
  - [LEEDuser](#)
  - [Arc](#)
  - [LEED v4.0](#) reference guide and checklist for EA assessment
  - [LEED V4.1](#)
  - [LEEDonline.com](#)
  - [DOE Building Science](#)



Green Building Learning Collaborative (GBLC) program & Reception is highly recommended for this course and is scheduled for Wednesday, **February 21, 2024, at 4:30-6:30 pm at the Gallery at the Architecture building.**

### ***Guest Speaker: Collaboratory, Energy modeling***

TH, 2/22

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

**Introduction to the zero energy Buildings**

- DOE Building Science Education
  - o [Module 2: Zero Energy Buildings](#)

**In class breakout session:**

- 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

***Assignment #6, complete*** Energy Star Portfolio Manager for the class project (***individual assignment***)

***Assignment #6, discussion on Canvas module*** (***individual assignment***)

***Assignment #6, PowerPoint presentation summarizing the module*** (***team assignment***)

## **Mid-term exam, February 23, 2024**

### **Module 7: Building Systems and Commissioning**

T, 2/27

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

**Reading links on Canvas module:**

**Introduction to the zero energy Buildings**

- DOE Building Science Education
  - o [Module 3: Building Envelop](#)
- Building envelop design and specification.
- Building envelop commissioning
- Building architecture drawings
- ***Complete requirements for EA***

**Tools:**

- [Energy Star Target Finder](#)
- [LEEDuser](#)
- [LEED v4.0](#)
- [LEED V4.1](#)
- [LEEDonline.com](#)

TH, 2/29

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

**Introduction to the zero energy Buildings**

- DOE Building Science Education
  - o [Module 4: HVAC Systems](#)
- HVAC drawing and specification

**In class breakout session:**

- 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

**Guest Speaker: Branch Pattern, Decarbonization**

*Assignment #7, complete Energy Star Target Finder for the class project (individual assignment)*

*Assignment #7, discussion on Canvas module (individual assignment)*

*Assignment #7, PowerPoint presentation summarizing the module (team assignment)*

**Module 8: Building Systems and Commissioning (Cont.)**

T, 3/5

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

**Reading links on Canvas module:**

**Introduction to Net- Zero Energy Buildings**

- DOE Building Science Education
  - [Module 5: Lighting Systems](#)
- Lighting design and specification inside and outside
- Lighting audit and commissioning
- **Building MEP drawings and specification (mechanical and lighting only)**
- **Complete requirements for EA**

**Tools:**

- [Energy Star Portfolio Manager](#)
- [LEEDuser](#)
- [LEED v4.0](#) reference guide and checklist for EA assessment
- [LEED V4.1](#)
- [LEEDonline.com](#)

**Guest Speaker: Collaboratory Contractor**

TH, 3/7

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

**Introduction to the zero energy Buildings**

- DOE Building Science Education
  - [Module 6: Plug and Process Load](#)
- Building plug load review and specification
- Review energy modeling for plug load

**In class breakout session:**

- 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)*

Spring break, 3/11-3/15

## Module 9: Commissioning and Renewable Energy

T, 3/19

➤ 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](#)
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### ***Guest Speaker: Renewable energy***

TH, 3/21

**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 10: Materials and Resources (MR)

T, 3/26

➤ Instructor's presentation on the module

**Reading links on Canvas module:**

- Material use overview
- Material specification considering post and pre consumer contact, EPD and HPD

	<ul style="list-style-type: none"> <li>- Construction and demolition waste management planning</li> <li>- Design for deconstruction</li> <li>- Material life cycle</li> <li>- <b>Complete requirements for MR</b></li> </ul> <p><b>Tools:</b></p> <ul style="list-style-type: none"> <li>- <a href="#">Material Calculator</a></li> <li>- <a href="#">LEEDuser</a></li> <li>- <a href="#">LEED v4.0</a> reference guide</li> <li>- <a href="#">LEED V4.1</a></li> <li>- <a href="#">LEEDonline.com</a></li> </ul>
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**Guest Speaker: Siemens, ESCO**

TH, 3/28	<p><b>In class breakout session:</b></p> <ul style="list-style-type: none"> <li>- Each team reviews the module topics</li> <li>- Identify key strategies the project team should consider for the class project based on the project goals</li> <li>- Review <a href="#">LEED v4 checklist</a>, MR for the class project</li> <li>- Develop backup documentations for credits attempted</li> <li>- <b>Each team develops a PowerPoint presentation</b> summarizing the module, identify approaches &amp; strategies used, tools &amp; skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module</li> </ul>
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*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 11: Indoor Environmental Quality (IEQ)**

T, 4/2	<p>➤ <b>Instructor’s presentation on the module</b></p> <p><b>Reading links on Canvas module:</b></p> <ul style="list-style-type: none"> <li>- Strategies for healthy building</li> <li>- ASHREA 62.1, ventilation</li> <li>- ASHREA 55, thermal comfort</li> <li>- Acoustic, daylight, views</li> <li>- Low emitting materials</li> <li>- Air quality management during construction</li> <li>- Building MEP drawings (mechanical)</li> <li>- <b>Complete requirements for IEQ</b></li> </ul> <p><b>Tools:</b></p> <ul style="list-style-type: none"> <li>- <a href="#">LEEDuser</a></li> <li>- <a href="#">Arc</a></li> <li>- <a href="#">LEED v4.0</a> reference guide and checklist for IEQ assessment</li> <li>- <a href="#">LEEDonline.com</a></li> <li>- Canvas team page for organizing the backup documentation for IEQ</li> </ul>
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**Guest Speaker: Commissioning Envelop, MEP**

TH, 4/4	<p><b>In class breakout session:</b></p> <ul style="list-style-type: none"> <li>- Each team reviews the module topics</li> </ul>
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	<ul style="list-style-type: none"> <li>- Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements</li> <li>- Review LEED v4 checklist, IEQ for the class project</li> <li>- Develop backup documentations for credits attempted</li> <li>- <b>Each team develops a PowerPoint presentation</b> summarizing the module, identify approaches &amp; strategies used, tools &amp; skills learned, application of the Net-Zero Energy Building to the project and include SDGs related to this module</li> </ul>
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*Assignment #11, Develop IEQ plan during construction (individual assignment)*

*Assignment #11, discussion on Canvas module (individual assignment)*

*Assignment #11, PowerPoint presentation summarizing the module (team assignment)*

**Module 12: Innovation and Regional Priority (RP)**

T, 4/9	<p>➤ <b>Instructor’s presentation on the module</b></p> <p><b>Reading links on Canvas module:</b></p> <ul style="list-style-type: none"> <li>- Strategies for innovative approach</li> <li>- Pilot credits</li> <li>- Exemplary performance</li> <li>- <b>Complete requirements for Innovation and RP</b></li> </ul>
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**LEED project field trip, campus project**

TH, 4/11	<p><b>In class breakout session:</b></p> <ul style="list-style-type: none"> <li>- Each team reviews the module topics</li> <li>- Identify key strategies the project team should consider for the class project based on the project goals, location, and requirements</li> <li>- Review LEED v4 checklist, Innovation and RP for the class project</li> <li>- Develop backup documentations for credits attempted</li> <li>- <b>Each team develops a PowerPoint presentation</b> summarizing the module, identify approaches &amp; strategies used, tools &amp; skills learned. Reflection on the semester</li> </ul>
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**Module 13: LEED Exam Review**

T, 4/16	<p><b>Reading links on Canvas module:</b></p> <ul style="list-style-type: none"> <li>- Review GA exam registration</li> <li>- Prepare for LEED GA Exam</li> <li>- LEED v4 Green Associate Candidate Handbook</li> <li>- Guide to the LEED Green Associate V4 Exam from UF Library</li> <li>- Continuing education for credential maintenance</li> <li>- Practice samples of the 100 questions for the LEED GA exam</li> </ul> <p><b>In class breakout session:</b></p> <ul style="list-style-type: none"> <li>- Each team reviews the module topics</li> <li>- Identify key strategies to prepare for the LEED GA exam</li> <li>- Practice LEED GA exam registration</li> </ul> <p><b>Review DOE Building Science Education Series</b></p> <ul style="list-style-type: none"> <li>- <a href="#">Module 7, Additional/Optional Resources</a></li> </ul>
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## Module 14: Review class project

TH, 4/18

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, April 23, 2024**

## Module 15: Final presentation

T, 4/23

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".

## Getting Help

### Health and Wellness

#### **U Matter, We Care:**

If you or a friend is in distress, please contact [umatter@ufl.edu](mailto: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](mailto: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 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/](http://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 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.