

Sustainable Solutions for the Built Environment

DCP 3210, Section 5265, Fall 2019

Tuesdays (Periods 3&4) 9:35-11:30am and Thursdays (Period 3) 9:35-10:25am
Rinker, Room 215

Prerequisite: BCN 1582 or IDS 2154, or a course approved in the topic area

Bahar Armaghani, LEED Fellow

ARCH 446 (east end of Architecture Building)

352-294-1428, Canvas email (preferred), or barmagh@ufl.edu (alternative)

Office Hours: TH 10:30-12:00pm, or by appointment

The term **built environment** refers to the human-made surroundings that provide the setting for human activity, ranging in scale from buildings and parks or green space to neighborhoods and cities that can often include their supporting infrastructure, such as water supply, and energy networks. The built environment is a material, spatial and cultural product of human labor that combines physical elements and energy in forms for living, working and playing. It has been defined as “the human-made space in which people live, work, and recreate on a day-to-day basis”. The “built environment encompasses places and spaces created or modified by people including buildings, parks, and transportation systems”. In recent years, public health research has expanded the definition of "built environment" to include healthy food access, community gardens, “walkability”, and “bikability”, reason include sustainable development aimed at smart growth.



<http://www.burnsmcd.com/Sustainability-Summit>

To provide sustainable solutions for the built environment, we must:

Use all resources wisely, Consider the needs of future generations, Evaluate a wide range of risks, Protect and enhance the environment, Conserve energy and natural resources, Improve quality of life, and Encourage innovative approaches to the design, construction, operation and maintenance of facilities.

Learning Objectives

This course is designed to produce the following outcomes:

- Exploring, understanding, and comparing sustainability and resilience.
- Evaluate and communicate the effectiveness of current sustainability initiatives in the built environment and ability to assess whether they are operating in an effective sustainability framework.
- Create a focus on the execution of strategies to drive long term sustainability performance.
- Develop own body of knowledge to improve own sustainability competency and learn the importance of communicating the built environment's sustainability level.

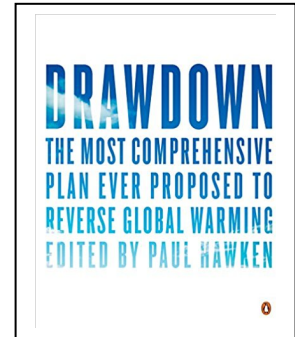
- Understand how to reflect on the future of sustainability in the built environment, communities, and cities.
- Identify the characteristics of best-practice in sustainable building/development/infrastructure initiatives and look beyond current initiatives to resilient buildings and cities.
- Communicate and justify sustainable design principles, strategies, solutions and/or outcomes.

Delivery Method: Lectures, discussions, guest speakers, case studies, work in teams, team presentations, quizzes, reports, and field trips.

Course Website: <https://lss.at.ufl.edu/>: Course material will be on e-learning/Canvas, including readings, lecture slides, assignment, quizzes, announcements, and grades. All course material will be posted before semester starts.

Required Text/Reading:

- Hawken, P. (2018). Drawdown: The most comprehensive plan ever proposed to reverse global warming. <http://www.drawdown.org/>
- In addition to the required text(s), various supplemental, free publications identified for class discussion and/or assignments is supplied via syllabus on Canvas e-Learning portal (<https://lss.at.ufl.edu/>). Students are expected to complete readings as advance preparation for class discussions.
- This is a reading-intensive course. Active student engagement with the reading material and associated class discussions will be an important component of your grade (see grading policy below).



Field Trips

A multi-day field trip is required for this course as a complement to course material and topics.

➤ Out of State Field Trip; Atlanta Georgia

This field trip is scheduled for September 25th, 26th, and 27th. The destination of this field trip is Atlanta, Georgia. The cost for the trip ranges from \$250.00 to \$300.00 per person depending on the number of students in the class. This includes transportation, hotel, breakfast and Wi-Fi. The final cost of the trip will be communicated to the students after drop add week. The fee is collected on September 10th. Checks and money order only, make checks or money order payable to University of Florida. See at end of syllabus the trip's detail itinerary. Below link is to the UF undergraduate catalog related to the required field trips.

https://catalog.ufl.edu/UGRD/colleges-schools/UGDCP/SUB_BSUB_BSUB01/

The instructor will provide a letter to each students to obtain excuse for classes that will be missed during our trip. Deliver the letter to your professor by third week of classes.

➤ Local Field Trips:

- TH; 10/10, O'Connell Center, LEED V4 Gold
- T; 11/12, UF Wastewater Treatment Plant

➤ Guest Speakers:

- T; 9/10, Mike Hess, Smart City Project Director, Orlando

- By the end of 2nd week of classes, each student must e-mail me the name and contact information of the class Instructor(s) that will be missed during Atlanta field trip. I will notify them about this required field trip.

Tools and Resources

- BuildingGreen, Homepage | <https://www.buildinggreen.com/>
Knowledge Base | <https://www.buildinggreen.com/knowledge-base>
Product Guidance | <https://www.buildinggreen.com/product-guidance>
- Drawdown, Homepage | <https://www.drawdown.org/>
Solutions | <https://www.drawdown.org/solutions>
- 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/>

Paperless

- E-learning on Canvas will be the hub for the communication, announcements, assignments, and exams.
- Check e-learning on Canvas for the weekly material and presentations.
- Set up your e-mail to receive class announcements from e-learning on Canvas.
- All assignments/papers/presentations must be turned in electronically through e-learning on Canvas.
- Final paper and weekly assignments should be in double spaces and 12 font.

Class Attendance and Make-Up Policy

- Students attending class must be prepared for active participation and discussion. A quality learning experience in this course rests heavily on interaction and exchange ideas related to sustainable built environment.
- You are encouraged to take notes electronically, but not using the computer for surfing web for non-class related topics and doing work for other classes.
- **Using cell phones, texting, and surfing the web during class are not allowed except for class related search or an emergency. Phones must be put away during class.** Students who receive or make calls or text messages during class will be asked to leave and marked absent for the day.
- Attendance is required. Arriving late to class (5-10 minutes after start of the class, or falling asleep in the class) will be considered a ½ absence. Leaving early while the class is in session will be considered an unexcused absence.
- **Attendance for the all final presentations is required. 5% will be deducted from the final grade if absent and attend the final presentations late (5 minutes after starting the presentations).**
- Class work can **only** be made up for **excused** absences. Excused absences include illness, religious holidays, a death in the family, or participation as an athlete in official UF athletic events; to be excused, absences must be properly documented, for example with a doctor's note or documentation from athletic program.
University policies can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Assignment Policies:

Assignments will be opened on Canvas well in advance of their due dates and must be submitted by their posted deadlines. It is your responsibility to ensure that each assignment has been successfully uploaded to Canvas for

instructor grading. If you anticipate being unable to submit an assignment on time for an excusable reason, you must submit the assignment early or notify the instructor as early as possible. Extensions are not granted lightly and must be arranged in advance. *Otherwise, late work will be marked down a grade for each day it is late.* Additional instructions will be provided with each assignment. You must prepare all written assignments as follows:

- Use 12 point Times New Roman or Arial typeface.
- Double space using 1" margins and number your pages.
- Put your name, assignment title, and date on the first page.
- Proofread and spell check before submitting the assignment. Part of your grade is the use of appropriate grammar, punctuation, and accurate spelling.

A Note on Group Work:

There are two types of assignments in this course – individual and group. For exams, quizzes, and individual assignments you are expected to conduct yourself in accordance with the University's Honor Code (see statement on academic dishonesty below). For group assignments, you are expected to abide by the Honor Code, plus conduct yourself in the following manner:

- Be a good team member.
 - Be on time. Be respectful. Be responsive with group communication.
- Participate and contribute equally in each assignment.
 - If there are problems with group dynamics or participation/effort levels, please talk to the instructor.

Reading material and discussion

- This is a reading-intensive course. Active student engagement with the reading material and associated class discussions will be an important component of your grade.
- **Each student to read and understand the purpose/main idea of the topic and submit three comments related to the topic for discussion.**
- Students must complete the reading and post the required summary on his/her Canvas page before class.
- A team of two-three students will be assigned to lead the discussion to each topic.
- **At the end of each module, teams who lead the discussion for the week will lead the discussion on the Drawdown topic.**

Final Project: Think Resilient and Sustainability in developing a property between 19th and 20th Avenue off of 34th street. This is a team project with the following teams:

- A- Land development and policies
- B- Infrastructure
- C- Transportation
- D- Site and landscape
- E- Water indoor and outdoor
- F- Energy and renewable energy
- G- Material use
- H- Indoor air quality

All projects, presentations, quizzes, and assignments must be turned in on time; projects or assignments may be turned in early. If you will not be in class to turn the assignment in, even if it is an excused absence (e.g. studio field trip), you must turn the assignment in early. Any assignment turned in after it is due will be marked late, and your grade will be penalized.

Requirement for the class to attend fall semester Green Building Learning Collaborative event. This program is scheduled for Wednesday, September 18th from 3:00- 5:30pm.



Grading

Assignment	Instruction	points of grade	Due date
Exams (2)	Individual;	30	Exam 1; 10/3/2019 Exam 2; 11/14/2019 On Canvas
Assignments,	Individual Reading Assignments & Discussion; - Drawdown - Online Articles - Project research and discussion - Attendance	10 10 15 5	In class, and on Canvas. See schedule
Final project report and presentation	Team final project presentation to the client	30	Final Presentation to the client 12/3/2019

Grade Scale:

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

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

Online course evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. 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. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>

Accommodating Students with Disabilities

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

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.

Campus Resources

Health and Wellness

U Matter, We Care:

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

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

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

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu

<https://lss.at.ufl.edu/help.shtml>

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

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

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

<http://teachingcenter.ufl.edu/>

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

<http://writing.ufl.edu/writing-studio/>

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>

“Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. 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. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.”

Need Help? Don't hesitate to ask

PROBLEMS WITH e-learning on Canvas

For issues with technical difficulties for e-learning on Canvas, contact the UF Help Desk at:

Learning-support@ufl.edu

(352) 392-HELP(4357) - select option 2

<https://lss.at.ufl.edu/help.shtml>

Disclaimer: This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to adjust to accommodate field trips and guest speaker's availability and based on what is new in the sustainability industry. Such adjustments are communicated clearly in class and via written announcements on Canvas. These adjustment are not unusual and should be expected.

Weekly Class Schedule

Date	Topic	Reading & Assignments	Teams
Module 1: Welcome and Introduction			
T, 8/20	<ul style="list-style-type: none"> - Welcome & Introduction - Review syllabus - Review use of Canvas - Form teams <p>UF sustainability and green building status</p> <p>UN sustainable Development Goals</p> <p>Architecture 2030 2030 challenge</p> <p>2030 challenge for planning</p> <p>2030 challenge for products</p> <p>- Video, Carbon smart buildings, Ed Mazria</p>	<p>http://sustainable.ufl.edu/ www.facilities.ufl.edu</p> <p>https://www.un.org/sustainabledevelopment/poverty/</p> <p>https://architecture2030.org/about/ https://architecture2030.org/big-announcement/ https://architecture2030.org/2030_challenges/2030-challenge/</p> <p>https://architecture2030.org/2030_challenges/2030_challenge_planning/</p> <p>https://architecture2030.org/2030_challenges/products/</p> <p>https://www.bing.com/videos/search?q=Road+to+Zero%2c+Ed+Mazria&view=detail&mid=57D2D45B328F54031D9D57D2D45B328F54031D9D&FORM=VIRE</p>	
Introduction to the class project, 3557 NW 19th Avenue, between 19th and 20th Avenue off of 34th street.			
TH, 8/22	<p>Paris Climate Change Agreement</p> <p>Cutting Emissions as Cities Grow: 8 Actions from WRI</p>	<p>https://earthjustice.org/features/paris-agreement?gclid=EAlaIqobChMI7rvu5JK21AIVTySBCh0XJQQuEAAYASAAEgLE D BwE</p> <p>https://www.buildinggreen.com/newsbrief/cutting-emissions-cities-grow-8-actions-wri</p>	
Assignment #1 (individual): One page summary on Drawdown solution #1 and the reverse of global warming, double space, 12 font.			

Drawdown book, website	#1 solution, presentation and discussion	Team A
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Module 2: Living building & Communities
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<p>T, 8/27</p> <p>Resilience Is Scaling Up</p> <p>The Four Core Issues to Tackle for Resilient Design (And the Programs That Can Help)</p> <p>LEED to Certify Entire Communities, Cities</p> <p>Community-Scale Sustainability: Accelerating Change for People and Planet</p> <p>Smart Cities</p> <p>The Mile High Smart City in Denver</p> <p>Fujisawa Sustainable Smart Town</p> <p>Video, Packard Foundation HQ</p>	<p>https://www.buildinggreen.com/news-analysis/resilience-scaling</p> <p>https://www.buildinggreen.com/feature/four-core-issues-tackle-resilient-design-and-programs-can-help</p> <p>https://www.buildinggreen.com/newsbrief/leed-certify-entire-communities-cities</p> <p>https://www.buildinggreen.com/feature/community-scale-sustainability-accelerating-change-people-and-planet</p> <p>https://rg.smartcitiescouncil.com/readiness-guide/article/built-environment</p> <p>https://www.youtube.com/watch?v=BF-iwB96BOA</p> <p>https://www.youtube.com/watch?v=4tyoHJxBI5o</p> <p>https://www.packard.org/about-the-foundation/our-green-headquarters/tour-our-building/</p>	
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TH, 8/29

Assignment #2 (individual): One page summary on Drawdown solution #2 and the reverse of global warming, double space, 12 font.

Drawdown book, website	# 2 solution, presentation and discussion	Team B
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Module 3: Whole-Systems Thinking:
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<p>T, 9/3</p> <p>Work Globally, Design Locally</p> <p>IgCC Opens Compliance Pathway Based on Actual Energy Use</p> <p>IgCC Local Adoptions by State</p> <p>Green Roads</p>	<p>https://www.buildinggreen.com/feature/work-globally-design-locally</p> <p>https://www.buildinggreen.com/newsbrief/igcc-opens-compliance-pathway-based-actual-energy-use</p> <p>http://bcapcodes.org/code-status/local-adoptions/#fl</p> <p>https://www.greenroads.org/2899/why-greenroads.html</p>	
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	<p>Institute for Sustainable Infrastructure (ISI), Envision</p> <p>Biophilia and biomimicry</p> <p>Biophilic cites</p> <p>Colleges Making Progress—and Money—on Their Carbon Commitments, <i>look at UF</i></p>	<p>http://sustainableinfrastructure.org/envision/</p> <p>http://www.terrabinbrightgreen.com/reports/14-patterns/#biomorphic-forms-and-patterns</p> <p>http://citiscopes.org/story/2015/whats-biophilic-city-let-timothy-beatley-explain</p> <p>https://www.buildinggreen.com/newsbrief/colleges-making-progress%E2%80%94and-money%E2%80%94their-carbon-commitments</p> <p>Research and report University of Florida’s status on carbon reduction commitment</p>	
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Guest speaker from City planning to review the class project



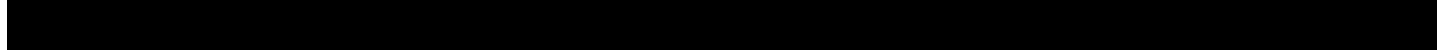
TH, 9/5

Class project site visit, 3557 NW 19th Avenue, between 19th and 20th Avenue off of 34th street.

Assignment #3 (individual): One page summary on Drawdown solution #3 and the reverse of global warming, double space, 12 font.

Drawdown book, website	# 3 solution, presentation and discussion	Team C
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Module 4: Land Use Planning; The importance of land-use planning in creating sustainable communities and transportation



<p>T, 9/10</p>	<p>New Urbanism, principles, benefits, & challenges</p> <p>Conservation subdivision</p> <p>See conservation subdivision design overview and case studies</p> <p>New EcoDistricts Protocol Aims for Green Building at Scale</p> <p>Transportation; US high speed rail</p> <p>Carbon Savings from Transit</p> <p>The Consumer road to self-driving cars</p>	<p>http://www.newurbanism.org/newurbanism/principles.html</p> <p>http://www.landchoices.org/conservationsubs/4steps/consubs_4steps_arendt_1.htm</p> <p>http://www.landchoices.org/toptenways.htm</p> <p>https://www.buildinggreen.com/news-analysis/new-ecodistricts-protocol-aims-green-building-scale</p> <p>http://www.ushsr.com/ushsrmap.html find out about the status of Florida high speed rail</p> <p>http://www2.buildinggreen.com/article/huge-carbon-savings-transit-could-dwarf-building-efficiency?</p> <p>https://na.panasonic.com/us/trends/consumer-road-self-driving-cars</p>	
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Guest speaker: Mike Hess, Smart City Project Director, Orlando

TH, 9/12

Class project, planning, transportation, and infrastructure assessment and recommendations

Assignment #4 (individual): One page summary on Drawdown solution #4 and the reverse of global warming, double space, 12 font.


<p>Drawdown book, website</p>	<p># 4 solution, presentation and discussion</p>	<p>Team D</p>
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Module 5: Site and Landscape

<p>T, 9/17</p>	<p>Putting a “LID” on Harmful Stormwater Runoff</p> <p>Smart Surfaces” Could Save Cities Billions</p> <p>Stormwater Biofiltration That’s Also Smaller and Cheaper</p> <p>White Roofs in Cold Climates a Mistake</p>	<p>https://www.buildinggreen.com/primer/putting-%E2%80%9Cid%E2%80%9D-harmful-stormwater-runoff</p> <p>https://www.buildinggreen.com/newsbrief/smart-surfaces-could-save-cities-billions</p> <p>https://www.buildinggreen.com/product-guide/stormwater-treatment</p> <p>https://www.buildinggreen.com/newsbrief/white-roofs-cold-climates-mistake-says-lca-study</p>	
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Win the Turf Wars with Rubber-Free Artificial Fields	https://www.buildinggreen.com/news-analysis/sites-v2-sustainable-landscapes-aligns-lead
BuildingGreen-Approved Landscaping Products	https://www.buildinggreen.com/product-review/win-turf-wars-rubber-free-artificial-fields
Denver Votes Green Thumbs Up for Green Roof	https://www.buildinggreen.com/product-guide/landscaping https://www.buildinggreen.com/news-analysis/denver-votes-green-thumbs-green-roofs
Porous pavement	http://daily.sightline.org/2012/01/03/the-porous-road-less-traveled/

Requirement for the class to attend fall semester Green Building Learning Collaborative event.



This program is scheduled for Wednesday, *September 18th* from 3:00- 5:30.

TH, 9/19

Class project, site and landscape assessment and recommendations

Assignment #5 (individual): One page summary on Drawdown solution #5 and the reverse of global warming, double space, 12 font.

Drawdown book, website	# 5 solution, presentation and discussion	Team E
Discussion & feedback on the GBLC event	One page	All

Module 6: Water Conservation; water could become the greatest constraint to development

T, 9/24	How Low-Flow Can You Go with Plumbing Fixtures?	https://www.buildinggreen.com/product-review/how-low-flow-can-you-go-plumbing-fixtures
	The Embodied Energy of Tap Water	https://www.buildinggreen.com/primer/embodied-energy-tap-water
	Watersense	https://www3.epa.gov/watersense/
	Tampa Bay Water	http://www.tampabaywater.org/tampa-bay-seawater-desalination-plant.aspx

	<p>What Makes Plumbing Green? Guide to Plumbing Products</p> <p>Net-Zero Water and More: Moving Beyond “Low Flow”</p>	<p>https://efc.sog.unc.edu/sites/www.efc.sog.unc.edu/files/2017/Tampa%20Bay%20Water_Final_Web.pdf</p> <p>https://www.buildinggreen.com/feature/what-makes-plumbing-green-buildinggreen%E2%80%99s-guide-plumbing-products</p> <p>http://www2.buildinggreen.com/article/net-zero-water-and-more-moving-beyond-low-flow?</p>	
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Assignment #6 (individual): One page summary on Drawdown solution #6 and the reverse of global warming, double space, 12 font.

Drawdown book, website	# 6 solution, presentation and discussion	Team F
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Atlanta Field Trip, Wednesday, 9/25 - Friday, 9/27

See appendix at the end of this syllabus for details

Module #7: Energy Conservation, Efficiency, and Renewable energy

Green buildings and communities starts with energy savings

<p>T,10/1</p>	<p>Climate Change: Building Industry, You’ve Got This!</p> <p>Setting the Standard for Climate-Protective Homes</p> <p>New Zero Energy Certification Powered by ILFI and NBI</p> <p>Could Passivhaus High-Rise Become the Norm?</p> <p>Thoughts on the Future of the Zero Energy Market</p> <p>Zero-Energy Buildings for All</p> <p>Case study, Net Zero Energy Building</p>	<p>https://www.buildinggreen.com/feature/climate-change-building-industry-you-ve-got</p> <p>https://www.nrdc.org/experts/david-b-goldstein/setting-standard-climate-protective-homes</p> <p>https://www.buildinggreen.com/newsbrief/new-zero-energy-certification-powered-ilfi-and-nbi</p> <p>https://www.buildinggreen.com/newsbrief/could-passivhaus-high-rise-become-norm</p> <p>https://www.buildinggreen.com/news-analysis/thoughts-future-zero-energy-market</p> <p>https://www.buildinggreen.com/blog/zero-energy-buildings-all-0</p>	
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		http://www.treehugger.com/green-architecture/net-zero-energy-building-certification-finally-defines-what-net-zero-really-means.html	
TH,10/3	Scaling Up Engagement with Net-Zero-Energy Goals	https://www.buildinggreen.com/news-analysis/scaling-engagement-net-zero-energy-goals	
Exam 1			
Class project, water assessment and recommendations			
Assignment #7 (individual): One page summary on Drawdown solution #7 and the reverse of global warming, double space, 12 font.			
Drawdown book, website		# 7 solution, presentation and discussion	Team G
Module #8: Energy Conservation, Efficiency, and Renewable energy Green buildings and communities starts with energy savings (Con.)			
T, 10/8	<p>Building Enclosure Commissioning: Ensuring Durable and Energy-Efficient Buildings</p> <p>New Refrigerants, Less Global Warming</p> <p>The Cost of Comfort: Climate Change and Refrigerants</p> <p>Brock Environmental Center Vindicates Onsite Wind</p> <p>Product as a Service: Buying the Lumen, Not the Lightbulb</p> <p>Embracing the Economy as a Design Challenge</p>	<p>https://www.buildinggreen.com/primer/building-enclosure-commissioning-ensuring-durable-and-energy-efficient-buildings</p> <p>https://www.buildinggreen.com/primer/new-refrigerants-less-global-warming</p> <p>https://www.buildinggreen.com/feature/cost-comfort-climate-change-and-refrigerants</p> <p>https://www.buildinggreen.com/newsbrief/brock-environmental-center-vindicates-onsite-wind-generation</p> <p>https://www.buildinggreen.com/primer/product-service-buying-lumen-not-lightbulb</p> <p>https://www.buildinggreen.com/feature/embracing-economy-design-challenge</p>	
TH, 10/10	Field Trip	O’Conner Center, LEED V4 Gold Building http://floridagators.com/sports/2015/12/28/renovation.aspx	
Class project, energy assessment and recommendations			

Assignment #8 (individual): One page summary on Drawdown solution #8 and the reverse of global warming, double space, 12 font.

Drawdown book, website	# 8 solution, presentation and discussion	Team H
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Module 9: Indoor Environmental Quality; An unhealthy building/community cannot be a green building/community

T, 10/15	Radon in Buildings	http://www2.buildinggreen.com/article/radon-and-schools-study-denial?	
	WELL Building Standards	http://www2.buildinggreen.com/article/well-building-standard-officially-launches?	
	Fitwell	https://fitwel.org/certification	
	Employee Performance Doubled in Well-Ventilated Buildings	https://www.buildinggreen.com/news-analysis/employee-performance-doubled-well-ventilated-buildings	
	Do Living Walls Make for Cleaner Indoor Air?	https://www.buildinggreen.com/product-review/do-living-walls-make-cleaner-indoor-air	
	VOC Testing: What It Can and Can't Tell You	https://www.buildinggreen.com/primer/voc-testing-what-it-can-and-can-t-tell-you	
	How to Get from VOC Certifications to Better Products	https://www.buildinggreen.com/feature-shorts/how-get-voc-certifications-better-products	

TH, 10/17 **Class project, energy assessment and recommendation(cont.)**

Assignment #9 (individual): One page summary on Drawdown solution #9 and the reverse of global warming, double space, 12 font.

Drawdown book, website	# 9 solution, presentation and discussion	All Teams
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Module 10: Material and Resources: Understanding the environmental impact of what goes into our buildings

T, 10/22	BuildingGreen Announces Top 10 Products for 2018	https://www.buildinggreen.com/product-review/buildinggreen-announces-top-10-products-2018	
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	<p>Product as a Service: Buying the Lumen, Not the Lightbulb</p> <p>The Great Eight: High-Impact Material Choices for Green Building</p> <p>The Great Eight: High-Impact Material Choices for Green Building</p> <p>Resilient Flooring</p> <p>Design Strategies for Occupant Engagement—and Why They Boost Performance</p> <p>Greenest Greenbuild Products for the Indoor Environment and More</p>	<p>https://www.buildinggreen.com/content/green-building-materials-101-syllabus-supplement</p> <p>https://www.buildinggreen.com/content/green-building-materials-101-syllabus-supplement</p> <p>https://www.buildinggreen.com/feature/great-eight-high-impact-material-choices-green-building</p> <p>https://www.buildinggreen.com/product-guide/resilient-flooring</p> <p>https://www.buildinggreen.com/feature/design-strategies-occupant-engagement-and-why-they-boost-performance</p> <p>https://www.buildinggreen.com/product-review/greenest-greenbuild-products-indoor-environment-and-more</p>	
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<p>TH, 10/24</p>	<p>Class project, Indoor Environmental Quality assessment and recommendations</p>
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Assignment #10 (individual): One page summary on Drawdown solution #10 and the reverse of global warming, double space, 12 point font.

<p>Drawdown book, website</p>	<p># 10 solution, presentation and discussion</p>	<p>All Teams</p>
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<p>Module 11: Material and Health Understanding the health impacts of what goes into our buildings</p>	
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<p>T, 10/ 29</p>	<p>What’s an HPD Health Product Declaration?</p> <p>Why Chemical Transparency Matters</p> <p>TSCA Reform: Chemical Regulations, at a Cost</p> <p>Beating the red list</p>	<p>https://www.buildinggreen.com/feature-shorts/what%E2%80%99s-hpd-health-product-declaration-faqs</p> <p>https://www.buildinggreen.com/feature/why-chemical-transparency-matters</p> <p>https://www.buildinggreen.com/primer/tsca-reform-chemical-regulations-cost</p> <p>http://www2.buildinggreen.com/article/take-control-your-materials-four-empowering-lessons-teams-beat-red-list?</p>	
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	<p>Greenest Greenbuild Products for the Indoor Environment and More</p> <p>Cleaner Lungs Could Pay for Billion-Dollar Emissions Policies</p> <p>Connection between water conservation and infections</p>	<p>https://www.buildinggreen.com/product-review/greenest-greenbuild-products-indoor-environment-and-more</p> <p>https://www.buildinggreen.com/newsbrief/cleaner-lungs-could-pay-billion-dollar-emissions-policies</p> <p>http://www2.buildinggreen.com/article/surprising-connection-between-water-conservation-and-deadly-infections?</p>	
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<p>TH, 10/31</p>	<p>Class project, material use assessment and recommendations</p>
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Assignment #11 (individual): One page summary on Drawdown solution #11 and the reverse of global warming, double space, 12 point font.

<p>Drawdown book, website</p>	<p># 11 solution, presentation and discussion</p>	<p>All Teams</p>
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<p>Module 12: Looking Ahead: Climate Adaptation</p>	
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<p>T, 11/5</p>	<p>How a Hurricane Forged New Hope for Resilience</p> <p>Bouncing Forward from Disasters</p> <p>Concrete Pours through Loophole in New Carbon Law</p> <p>Urgent: Zero-Carbon Buildings Needed</p> <p>20 Ways to Advance Sustainability in the Next Four Years</p>	<p>https://www.buildinggreen.com/feature-shorts/how-hurricane-forged-new-hope-resilience</p> <p>https://www.buildinggreen.com/op-ed/bouncing-forward-disasters</p> <p>https://www.buildinggreen.com/news-analysis/concrete-pours-through-loophole-new-carbon-law</p> <p>https://www.buildinggreen.com/newsbrief/urgent-zero-carbon-buildings-needed</p> <p>https://www.buildinggreen.com/feature/20-ways-advance-sustainability-next-four-years</p>	
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<p>TH, 11/7</p>	<p>Class project, material use assessment and recommendations (cont.)</p>
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Assignment #12 (individual): One page summary on Drawdown solution #12 and the reverse of global warming, double space, 12 point font.

Drawdown book, website		# 12 solution, presentation and discussion	All Teams
T, 11/12	Field Trip	UF Wastewater Treatment Plant located on Gale Lemerand Drive, south of Physics’ building, ask for Jared Howard. http://campusmap.ufl.edu/	

Module 13: Economics and Green Jobs


TH, 11/14	<p>How Nature Creates Green Jobs—If We Listen</p> <p>Grow your green building knowledge with LEED Lab: What students are saying</p> <p>How to Build Green At No Added Cost</p> <p>Using LinkedIn to Find a Job or Internship</p> <p>LinkedIn custom “Jobs” search using the term “sustainability” plus using the “internship” option in the “Experience Level” filter (600 results as of this morning)</p> <p>LinkedIn custom search using the terms “sustainability intern” with no other filters applied (296 results as of this morning)</p>	<p>https://www.buildinggreen.com/blog/how-nature-creates-green-jobs%E2%80%94if-we-listen</p> <p>http://www.centerforgreenschools.org/grow-your-green-building-knowledge-leed-lab-what-students-are-saying</p> <p>https://www.buildinggreen.com/feature/how-build-green-no-added-cost</p> <p>https://university.linkedin.com/content/dam/university/global/en_US/site/pdf/TipSheet_FindingaJoborInternship.pdf</p> <p>https://www.linkedin.com/jobs/search/?f_E=1&geold=103644278&keywords=sustainability&location=United%20States</p> <p>https://www.linkedin.com/search/results/all/?keywords=sustainability%20intern&origin=GLOBAL_SEARCH_HEADER</p>	
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Exam 2

T, 11/19	Class project, review deliverables/presentation to the client
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Assignment #13 (individual): One page summary on Drawdown solution #13 and the reverse of global warming, double space, 12 font.

Drawdown book, website		# 13 solution, presentation and discussion	All Teams
TH, 11/21	Teams free work day in class or out to make up for the trip to Atlanta		
T, 11/26	Class project, practice deliverables/presentation to the client		

TH, 11/28			
12/3/2019	Final Presentation to the client	60 minutes presentation including video (if selected) and Q/A. Each team must upload the final deliverables to the client to the team's Canvas page before presentation	
All must attend the final presentation on 12/3. A 5% from the final grade will be deducted for being absent from the final presentation.			
All deliverables are due on Tuesday, 12/3 by 5:00 PM and must be uploaded to the team's Canvas page			