Sustainable Solutions for the Built Environment

DCP 3210, Section 5265, Fall 2016
Mondays 3:00-4:55pm and Wednesdays 3:00-3:50pm
Rinker 215

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Office Hours: W 4:00-5:00pm, 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:

- 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.

Course Format

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 on Canvas, including readings, lecture slides, assignment, quizzes, announcements, and grades. All course material will be posted before semester starts.

Communication: Outside of class, e-mailing barmagh@ufl.edu is the best and preferred method of communication.

Required Text: There is no required textbook for this course; required readings will be comprised of online articles (see schedule) and are made available on e-learning on Canvas.

Field Trips:

- A multi- day field trip is required for this course as a complement to course material and topics. **This field trip has been scheduled for October 5th, 6th, and 7th. The destination of this field trip is Atlanta, Georgia. The cost for the trip is ranged from $210.00 to $380.00 per person depending on the number of students in the class. The final cost of the trip will be communicated to the students the 1st week of classes. The fee is collected few weeks before the trip.**

  Below is the link to UF catalog of courses for DCP 3210, and reference to this field trip as a requirement.

  https://catalog.ufl.edu/ugrad/current/design/Majors/sustainability-and-the-built-environment.aspx

  - Other local and on campus field trips will be scheduled.
  - On the 3rd 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:

- https://www.buildinggreen.com/ufl**;** is an excellent resource on the latest in sustainable built environment, cases studies, articles, materials, and more. This is a membership based site, where University is a member of. That means you have full access to all the site content.
- To access this site while on campus, you will automatically be logged in the site.
- To access the site while off campus, you can remotely access the site using VPN.
- To access some campus resources when you are physically off campus, you may need to install UF's VPN. The UF VPN Service is designed to allow University Faculty, Staff, and Students to securely "tunnel" into campus over other networks, such as their home internet connection, and access services as if they were on campus. Basically, it lets your computer appear as if it were located physically on campus. To install, go to vpn.ufl.edu . To get more information about VPN, you can visit: https://connect.ufl.edu/it/wiki/Pages/glvpn.aspx.

Paperless: E-learning on Canvas will be the hub for the communication, discussion, 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 personal statement should be in single spaces and 12 font.

Participation, Attendance and other Policies

Attendance:

- 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.
- **Using cell phones, texting, and surfing the web during class are not allowed.**
- 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.
- The policy for attendance is as follows:

Unexcused Absences	Grade point deduction
4-5	5%
6-7	10%
8-9	15%
10-11	20%
Each addition 2 absences	Additional 5%
Final presentations	**Additional 5%**

- 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.

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 questions or 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 students will be assigned to lead the discussion to each topic.
- **At the end of each module, teams who were leading the discussion for the week will present to the class a case study related to the module topic showing the issues related to sustainability for the built environment. This case study can be local or global. Also, show a TED talk or other reputable videos related to the topic of the module.**

Final Project: Think Resilient and Sustainability

- This is a team project.
- Final Project Topic: Each team's final topic must be related to an identified/known/anticipated challenge in the built environment, and propose a solution to address the challenge. **This is due the week of 9/14/2016**.

Sample project topics related Infrastructure and the Built Environment from NYC's Resilient Plan

- Coastal Protection
- Buildings
- Economic Recovery
- Insurance
- Utilities
- Liquid Fuels
- Healthcare
- Community Preparedness and Response
- Telecommunications
- Transportation
- Parks
- Environmental Protection and Remediation
- Water and wastewater
- Solid waste
- Food supply

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.

Grading

Assignment	Instruction	points of grade	Due date
Exams (2)	Individual;	30	On Canvas
Assignments,	Individual; - Reading - Attendance, class & field trips - participate in discussions - Assignments	 10 10 5 5	In class, and on Canvas. See schedule
Start of class personal statement	Individual; minimum 500 words. What do you know about sustainability in the built environment	5	First week of classes, submit on Canvas
End of class personal statement	Individual; minimum1000 words. Tell us about you and sustainability in the built environment after completing this class	5	Last week of classes, submit on Canvas
Final project report and presentation or ---------- 3-5 minutes Video & report Or 3-5 minutes Video and presentation	Team project on a sustainable solution for the built environment. In 1500-2000 words describe the case, the challenge, the outcome of the solution and your recommendations. This must be in a report format.	30	Final week, submit on Canvas

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

UNIVERSITY OF FLORIDA POLICIES

Accommodating Students with Disabilities:
Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office 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 the 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.

Student Honor Code and Academic Honesty
Under the Student Honor Code see http://www.dso.ufl.edu/students.php, "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'" (6C1-4.040(a)).

Papers will be screened for plagiarism using the text-matching Tools Turnitin (http://turnitin.com/static/index.html). Students must submit work that is original to this course, i.e., not the student's work from another course (unless it is used as a reference and properly cited).

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

For any other helps contact the instructor.

Other resources are available at http://www.distance.ufl.edu/getting-help for:

- Counseling and Wellness resources
- Disability resources
- Resources for handling student concerns and complaints
- Library Help Desk support

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			
M, 8/22	- Welcome & Introduction - Review syllabus - Review use of Canvas - Form teams - Access Building green.com - What is architecture 2030 Progress on 2030 Goals, Ten Years Late **- Video,** PBS Architecture 2030 Ed Mazria – Design e2 **- Video,** Watch Ed Mazria and Peter Calthorpe's Presentation from Congress for the New Urbanism (CNU) 23rd meeting, *May 21, 2015* UF sustainability and green building status	https://www.buildinggreen.com/ufl http://architecture2030.org/ https://www.buildinggreen.com/feature-shorts/progress-2030-goals-ten-years-later http://www.pbs.org/e2/teachers/teacher_212.html http://architecture2030.org/watch-ed-mazria-and-peter-calthorpes-presentation-from-cnu-23/ http://sustainable.ufl.edu/ , www.facilities.ufl.edu	

W, 8/24	Colleges Making Progress—and Money—on Their Carbon Commitments, ***look at UF***	https://www.buildinggreen.com/newsbrief/colleges-making-progress%E2%80%94and-money%E2%80%94-their-carbon-commitments	Team1
	Cutting Emissions as Cities Grow: 8 Actions from WRI	https://www.buildinggreen.com/newsbrief/cutting-emissions-cities-grow-8-actions-wri	Team 1
	How Boston Reduced Its Carbon Footprint	https://www.buildinggreen.com/feature-shorts/how-boston-reduced-its-carbon-footprint	Team 1
	Assignment #1	500 words personal statement, What do you know about sustainability in the built environment	
Module summary by the teams, can include other related material, videos, and case studies			
Module 2: Whole-Systems Thinking; Introduction to living Green Building			
M, 8/29	**Summary Introduction/presentation**		
	Living Building Challenge	http://living-future.org/sites/default/files/reports/FINAL%20LBC%203_0_WebOptimized_low.pdf , reference and resource only	All Team
	TED Talk on Living Building	https://www.youtube.com/watch?v=gSMecC6pcGo	
	How to succeed Living Building Challenge	https://www2.buildinggreen.com/article/how-succeed-living-building-challenge-12-teams-share-tips	Team 2
	Product and Building Materials Red List and alternative	https://www.go-gba.org/resources/green-building-methods/materials-red-list/	Team 2
	Beyond living building	http://www2.buildinggreen.com/article/beyond-living-buildings-ilfi-expands-scope-food-products-communities?	Team 2
	Video, Packard Foundation HQ	http://living-future.org/netzero	
W, 8/31	IgCC Opens Compliance Pathway Based on Actual Energy Use	https://www.buildinggreen.com/newsbrief/igcc-opens-compliance-pathway-based-actual-energy-use	Team 3
	Rhode Island First to Adopt International Green Construction Code	https://www.buildinggreen.com/newsbrief/rhode-island-first-adopt-international-green-construction-code-0	Team 3
	Assignment #2; calculate your carbon footprint	http://www.nature.org/greenliving/carboncalculator/	
Module summary by the teams, can include other related material, videos, and case studies			
Module 3: Looking Beyond the Built Environment; Green building is about more than buildings			
M, 9/5	**Holiday**		

W, 9/7	**Summary Introduction/presentation**		
	Green Roads	https://www.greenroads.org/2899/why-greenroads.html	Team 4
	Institute for Sustainable Infrastructure (ISI), Envision	http://www.sustainableinfrastructure.org/downloads/index.cfm	Team 4
	Biophilia and biomimicry	http://www.terrapinbrightgreen.com/reports/14-patterns/#biomorphic-forms-and-patterns	Team 5
	Video; Biophilic design	https://vimeo.com/ondemand/biophilicdesign	
	Biophilic cites	http://biophiliccities.org/biophiliccities.html	Team 5
M, 9/12	**Summary Introduction/presentation**		
	The Four Core Issues to Tackle for Resilient Design (And the Programs That Can Help)	https://www.buildinggreen.com/feature/four-core-issues-tackle-resilient-design-and-programs-can-help	Team 6
	NYC Community Rebuilding and Resiliency plan	http://www.nyc.gov/html/sirr/html/report/report.shtml Reference, Resource	All Teams
	Video; NYC Special Initiative for Rebuilding and Resiliency	http://www.nyc.gov/html/sirr/html/about/about.shtml	
	100 resilient cities	http://www.100resilientcities.org/cities#/-_/	Team 6
	Video: Why 100 resilient cities?	https://www.youtube.com/watch?v=AtmADVlk_-Q	
	Resilient Design Strategies	http://www.resilientdesign.org/resilient-design-strategies/	Team 7
	Local Food and Resilience	https://www.buildinggreen.com/blog/local-food-and-resilience	Team 7
W, 9/14	**Field trip**	UF Wastewater Treatment Plant located on Gale Lemerand Drive, south of Physics' building, ask for Jared Howard. http://campusmap.ufl.edu/	
Module summary by the teams, can include other related material, videos, and case studies			
Teams' Final Paper/Project Topic Due. Post a paragraph on your project scope on your Canvas page			
Module 4: Land Use Planning; The importance of land-use planning in creating sustainable communities and transportation			
M, 9/19	**Summary Introduction/presentation**		
	New Urbanism, principles, benefits, & challenges	http://www.newurbanism.org/newurbanism/principles.html http://cnu.org/resources	Team 8
	Conservation subdivision	http://www.landchoices.org/conservationsubs/4steps/consubs_4steps_arendt_1.htm	Team 8

	See conservation subdivision design overview and case studies	http://www.landchoices.org/toptenways.htm	Team 9
	Video: Conservation subdivision	https://www.youtube.com/watch?v=pL8vuF34KbU, https://www.youtube.com/watch?v=IbGWpwuNfHI	
	Conservation subdivision design overview	http://www.landchoices.org/conservationsubs/consubs_pdfs/flawed_processes_flawed_results.pdf	Team 9
W, 9/21	Transportation; US high speed rail	http://www.ushsr.com/ushsrmap.html find out about the status of Florida high speed rail	Team 10
	Carbon Savings from Transit	http://www2.buildinggreen.com/article/huge-carbon-savings-transit-could-dwarf-building-efficiency?	Team 10
	Carbon Savings from Transit	http://www2.buildinggreen.com/article/huge-carbon-savings-transit-could-dwarf-building-efficiency?	Team 10
Module summary by the teams, can include other related material, videos, and case studies			
M, 9/26	Field trip	Waste management and recycling, Sally Palmi, Meet at the Leveda Brwon transfer station located on Waldo Road at 5115 N.E. 63rd Ave in Gainesville.	
Module 5: Site and Landscape; sustainable sites			
W, 9/28	**Summary Introduction/presentation** Putting a "LID" on Harmful Stormwater Runoff	https://www.buildinggreen.com/primer/putting-%E2%80%9Clid%E2%80%9D-harmful-stormwater-runoff	Team 11
	Are Cool Roofs Green	https://www.buildinggreen.com/feature/are-cool-roofs-green-answer%E2%80%99s-not-black-and-white	Team 11
	White Roofs in Cold Climates a Mistake	https://www.buildinggreen.com/newsbrief/white-roofs-cold-climates-mistake-says-lca-study	Team 11
M, 10/3	Sustainable Sites Initiative	http://www.sustainablesites.org/rating-system	Team 12
	SITES for Sustainable Landscapes Aligns with LEED	https://www.buildinggreen.com/news-analysis/sites-v2-sustainable-landscapes-aligns-leed	Team 12
	New EcoDistricts Protocol Aims for Green Building at Scale	https://www.buildinggreen.com/news-analysis/new-ecodistricts-protocol-aims-green-building-scale	Team 12
	Win the Turf Wars with Rubber-Free Artificial Fields	https://www.buildinggreen.com/product-review/win-turf-wars-rubber-free-artificial-fields	Team 13
	BuildingGreen-Approved Landscaping Products	https://www.buildinggreen.com/product-guide/landscaping	Team 13
Module summary by the teams, can include other related material, videos, and case studies			

Atlanta Trip

W, 10/5- F, 10/7	***Review for Atlanta trip***	This is a required field trip for this course Leaving Gainesville, 10/5 at 6:00 a.m. Leaving Atlanta, 10/7 at 1:00 p.m.	
	The Atlanta BeltLine,	http://beltline.org/about/the-atlanta-beltline-project/atlanta-beltline-overview/	
	Emory University	http://sustainability.emory.edu/page/1001/HOME	
	Serenbe,	http://serenbe.com/ http://www.terrain.org/2012/unsprawl/serenbe/	
	Falcon Stadium	http://newstadium.atlantafalcons.com/2014/11/04/video-stadium-general-manager-gives-update-on-one-of-a-kind-venue/	
	Perkins +Will	http://inhabitat.com/perkinswills-atlanta-office-is-now-the-highest-scoring-leed-platinum-project-in-north-america/	
	Epsten Group	http://epstengroup.com/	
Module 6: Rain water management **Water Conservation; w**ater could become the greatest constraint to development			
M, 10/10	**Summary** **Introduction/presentation**		
	Florida, Georgia water war continues	http://www.pnj.com/story/opinion/2016/06/19/florida-georgia-water-war-continues/86112440/	Team 14
	Stormwater biofiltration	http://www2.buildinggreen.com/article/stormwater-biofiltration-s-also-smaller-and-cheaper?	Team 14
	Porous pavement	http://daily.sightline.org/2012/01/03/the-porous-road-less-traveled/	Team 14
	What Makes Plumbing Green? Guide to Plumbing Products	https://www.buildinggreen.com/feature/what-makes-plumbing-green-buildinggreen%E2%80%99s-guide-plumbing-products	Team 15
	Net-Zero Water and More: Moving Beyond “Low Flow”	http://www2.buildinggreen.com/article/net-zero-water-and-more-moving-beyond-low-flow?	Team 15
	Water Budget	http://www2.buildinggreen.com/article/water-budgets-holistic-look-efficiency?	Team 15
	The Embodied Energy of Tap Water	https://www.buildinggreen.com/primer/embodied-energy-tap-water	Team 15
W, 10/12	Watersense	https://www3.epa.gov/watersense/	Team 16

	Watersense best management practices Tampa Bay Water	http://www.epa.gov/watersense/commercial/docs/factsheets/general_ci_fact_sheet_508.pdf http://www.tampabaywater.org/tampa-bay-seawater-desalination-plant.aspx	Team 16 Team 16
Module summary by the teams, can include other related material, videos, and case studies			
Quiz one, e-learning on Canvas			
Module 7: Energy Conservation, Efficiency, and Renewable energy Green buildings and communities starts with energy savings			
M, 10/17	**Summary** **Introduction/presentation** Net Zero Energy Building What Makes the Building Envelope Green? BuildingGreen's Guide to Thermal & Moisture Protection Products Solar Farms Offer Renewable Power Source Energy Is Federally Endorsed Metric for Net-Zero Buildings Wind Power Assignment #3; calculate your energy consumption	 http://www.treehugger.com/green-architecture/net-zero-energy-building-certification-finally-defines-what-net-zero-really-means.html https://www.buildinggreen.com/feature/what-makes-building-envelope-green-buildinggreen%E2%80%99s-guide-thermal-moisture-protection http://www2.buildinggreen.com/article/solar-farms-offer-renewable-power-rest-us? https://www.buildinggreen.com/news-analysis/source-energy-federally-endorsed-metric-net-zero-buildings https://www2.buildinggreen.com/blogs/wind-power-why-it-doesn-t-make-sense-everywhere https://www.energystar.gov/index.cfm?fuseaction=home_energy_yardstick.showGetStarted	 Team 1 Team 1 Team 2 Team 2 Team 2
W, 10/19	Field trip/Guest Speaker	Duke Energy and renewable energy/field trip to co-generation plant, Joel George	
M, 10/24	The Best Indoor LED Luminaires of 2016 New Refrigerants, Less Global Warming Brock Environmental Center Vindicates Onsite Wind The Problem with Net-Zero Buildings (and the Case for Net-Zero Neighborhoods)	https://www.buildinggreen.com/product-review/best-indoor-led-luminaires-2016 https://www.buildinggreen.com/primer/new-refrigerants-less-global-warming https://www.buildinggreen.com/newsbrief/brock-environmental-center-vindicates-onsite-wind-generation http://www2.buildinggreen.com/article/problem-net-zero-buildings-and-case-net-zero-neighborhoods	Team 4 Team 4 Team 5 Team 5
Module summary by the teams, can include other related material, videos, and case studies			

Module 8: Indoor Environmental Quality; An unhealthy building/community cannot be a green building/community			
W, 10/26	**Summary** **Introduction/presentation** Radon in Buildings	http://www2.buildinggreen.com/article/radon-and-schools-study-denial?	Team 6
	Pushing Weatherization, Feds Look the Other Way on Radon	https://www.buildinggreen.com/news-analysis/pushing-weatherization-feds-look-other-way-radon	Team 6
	WELL Building Standards	http://www2.buildinggreen.com/article/well-building-standard-officially-launches?	Team 7
	Green Design Tied to Fewer Sick Days	https://www.buildinggreen.com/newsbrief/attention-employers-green-design-tied-fewer-sick-days	Team 7
	Employee Performance Doubled in Well-Ventilated Buildings	https://www.buildinggreen.com/news-analysis/employee-performance-doubled-well-ventilated-buildings	Team 7
Module summary by the teams, can include other related material, videos, and case studies			
Module 9: Material and Resources Understanding the environmental impact of what goes into our buildings			
M, 10/31	**Summary** **Introduction/presentation**		
	The Great Eight: High-Impact Material Choices for Green Building	https://www.buildinggreen.com/feature/great-eight-high-impact-material-choices-green-building	Team 8
	What makes product green	http://www2.buildinggreen.com/article/what-makes-product-green	Team 8
	The PVC Debate: A Fresh Look	https://www.buildinggreen.com/feature/pvc-debate-fresh-look	Team 8
	Bamboo Flooring: Still Green, for a Price	https://www.buildinggreen.com/product-review/bamboo-flooring-still-green-price	Team 9
	Cladding: More Than Just a Pretty Façade	http://www2.buildinggreen.com/article/cladding-more-just-pretty-facade?	Team 9
W, 11/2	Guest speaker	Theresa Spurling wood , Alachua County Schools energy director	
Module summary by the teams, can include other related material, videos, and case studies			
Module 10: Material and Health Understanding the health impacts of what goes into our buildings			
M, 11/7	**Summary** **Introduction/presentation**		
	What's an HPD Health Product Declaration?	https://www.buildinggreen.com/feature-shorts/what%E2%80%99s-hpd-health-product-declaration-faqs	Team 10 Team 10

	Why Chemical Transparency Matters	https://www.buildinggreen.com/feature/why-chemical-transparency-matters	
	TSCA Reform: Chemical Regulations, at a Cost	https://www.buildinggreen.com/primer/tsca-reform-chemical-regulations-cost	Team 10
	Beating the red list	http://www2.buildinggreen.com/article/take-control-your-materials-four-empowering-lessons-teams-beat-red-list?	Team 11
	Building product and health	http://www2.buildinggreen.com/article/building-products-and-health-look-risk-vs-hazard?	Team 11
W, 11/9	Greenest Greenbuild Products for the Indoor Environment and More	https://www.buildinggreen.com/product-review/greenest-greenbuild-products-indoor-environment-and-more	Team 12
	Green Chemistry Meets Green Building	https://www.buildinggreen.com/primer/green-chemistry-meets-green-building	Team 12
	Connection between water conservation and infections	http://www2.buildinggreen.com/article/surprising-connection-between-water-conservation-and-deadly-infections?	Team 12
Module summary by the teams, can include other related material, videos, and case studies			
Module 11: Building Durability Longer-lasting buildings are greener buildings			
M, 11/14	**Summary** **Introduction/presentation**		
	Building commissioning	http://www2.buildinggreen.com/article/verifying-performance-building-enclosure-commissioning?	Team 13
	Weather & Air Barriers	https://www.buildinggreen.com/product-guide/weather-air-barriers	Team 13
	SIREWALL: The Next Generation of Earthen Walls	https://www.buildinggreen.com/product-review/sirewall-next-generation-earthen-walls	Team 13
	Raze or Retrofit? Six Extraordinary Answers to an Everyday Question	https://www.buildinggreen.com/feature/raze-or-retrofit-six-extraordinary-answers-everyday-question	Team 142
	What Makes the Building Envelope Green? BuildingGreen's Guide to Thermal & Moisture Protection Products	https://www.buildinggreen.com/feature/what-makes-building-envelope-green-buildinggreen%E2%80%99s-guide-thermal-moisture-protection	Team 14
Module summary by the teams, can include other related material, videos, and case studies			
Quiz two in e-learning on Canvas			
Module 12: Furniture and textile			
W, 11/16	A Guide to Selecting Sustainable Textiles	https://www.buildinggreen.com/feature/guide-selecting-sustainable-textiles	Team 15
	Three Hazardous Textile Treatments and How to Avoid Them	https://www.buildinggreen.com/feature-shorts/three-hazardous-textile-treatments-and-how-avoid-them	Team 15

	Finding Furniture Without Toxic Flame Retardants Healthcare Giants Boycott Furniture Containing Flame Retardants Finding furniture w/o toxic Assignment #4	https://www.buildinggreen.com/feature/finding-furniture-without-toxic-flame-retardants https://www.buildinggreen.com/newsbrief/healthcare-giants-boycott-furniture-containing-flame-retardants http://www2.buildinggreen.com/article/finding-furniture-without-toxic-flame-retardants? Individual minimum1000 words. Tell us about you and sustainability in the built environment after completing this class	Team 15 Team 16 Team 16
Module summary by the teams, can include other related material, videos, and case studies			
Module 13: Economics and Green Jobs			
M, 11/21	How Nature Creates Green Jobs—If We Listen Can Bioinspired Innovations Find Economic Footing? Green Job Training "Skyrocketing" in Higher Ed Green Building to Create 3 Million Jobs by 2018, Says USGBC How to Build Green At No Added Cost The Cost of LEED Certification	https://www.buildinggreen.com/blog/how-nature-creates-green-jobs%E2%80%94if-we-listen https://www.buildinggreen.com/newsbrief/can-bioinspired-innovations-find-economic-footing https://www.buildinggreen.com/newsbrief/green-job-training-skyrocketing-higher-ed https://www.buildinggreen.com/news-analysis/green-building-create-3-million-jobs-2018-says-usgbc https://www.buildinggreen.com/feature/how-build-green-no-added-cost https://www.buildinggreen.com/primer/cost-leed-certification	All teams
Module summary by the teams, can include other related material, videos, and case studies			
W,11/23	Happy Thanksgiving Holiday		
Module 14: Looking ahead: Climate Adaptation Today's buildings must be adaptable to an uncertain future			
M, 11/28	**Summary** **Introduction/presentation** Climate Change Fatigue? How to Read the IPCC Reports Six Ways Existing Buildings Can Save the Planet Pre and Post occupancy review	https://www.buildinggreen.com/editorial/climate-change-fatigue-how-read-ipcc-reports https://www.buildinggreen.com/feature-shorts/six-ways-existing-buildings-can-save-planet http://www2.buildinggreen.com/article/why-post-occupancy-review-future-design-and-how-it-can-serve-you-now	All Teams

	Climate Change: Building Industry, You've Got This!	https://www.buildinggreen.com/feature/climate-change-building-industry-you%E2%80%99ve-got	
W, 11/30	Integrated Project Deliver Design Strategies for Occupant Engagement—and Why They Boost Performance	https://www2.buildinggreen.com/article/how-make-integrated-project-delivery-work-your-project https://www.buildinggreen.com/feature/design-strategies-occupant-engagement%E2%80%94and-why-they-boost-performance	All Teams
Module summary by the teams, can include other related material, videos, and case studies			
M, 12/5 **W, 12/7** **M, 12/12** **W 12/14**	**Final Presentations** ***Teams; odd numbers*** ***Teams; even numbers*** ***Teams; odd numbers*** ***Teams; even numbers***	20 minutes presentation including video (if selected) and Q/A per team Each team to turn in options: - Report and presentation. Or - Report and a video (3-5 minutes). Or - Presentation and a video (3-5 minutes)	