

Sustainable Solutions for the Built Environment

DCP 3210, Section 5265, Fall 2015
Mondays 3:00-4:55pm and Wednesdays 3:00-3:50pm
ARCH 423

Bahar Armaghani, LEED Fellow, LEED Faculty
ARCH 446 (east end of Architecture Building)
barmagh@ufl.edu, 352-294-1428
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.
Wikipedia.



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

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

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 your own body of knowledge to improve your 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, community, and city.
- Identify the characteristics of best-practice in sustainable building/development/infrastructure initiatives and look beyond current initiatives to resilient buildings and cities.
- Professionally communicate and justify sustainable design principles, strategies, solutions and/or outcomes.

Philosophy Statement

Never doubt that you as an individual and as a member of a small group of thoughtful citizens can change the world for the better, the reality that is the only way things get changed. Your learning, knowledge, inspiration, and innovation in finding solutions for the built environment and community can make a difference not only in your life but in your community, city, and the world.

Course Format

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

Course Website: <https://lss.at.ufl.edu/>: This course's e-learning on Canvas site will contain all course materials, including readings, lecture slides, assignment instructions, quizzes, announcements, and grades. All course material will be posted before class starts.

Communication: Outside of class, barmagh@ufl.edu email is the best and preferred method of communication. Do not email me through the e-Learning on Canvas site.

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

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 will be scheduled as a complement to classroom instruction. Information on dates, cost and other details will be issued within the first weeks of class. **The field trip is required for SBE majors and minors;** all other students are strongly encouraged to participate in this activity as it harmonizes the fundamental component of the course. **This field trip has been scheduled for October 14th, 15th, and 16th. 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.**
- *Students who due to extenuating circumstances are unable to join the field trip must submit a written request to be excused from participation no later than the deadline established for payment of field trip dues. Petitions should be addressed to the instructor and program director, and will be considered on an individual basis. Given that there are assignments associated to the field trip experience, students not joining in the field trip will be required to produce an alternative research project as determined by the instructor. This research project, although not a replacement for the experience afforded the student by the field trip, will demand considerable effort by the student and will entail a formal presentation to the class.*

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.

Tools and Resources:

- **Pocket Guide to APA Style / Edition 2**, by [Robert Perrin](#). This will help you with your report writing.
- www.buildinggreen.com ; is an excellent resource in 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 and can use it.
- To access the site while you are 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>.
- If you have problems accessing the site use the following;
<https://www2.buildinggreen.com/campus>

Paperless Activities and Assignments: E-learning on Canvas will be the hub for the communication, discussion, announcements, turn in assignments, papers/projects, take quizzes, and presentation material.

- Check e-learning on Canvas for the material and presentations that will be covered weekly.
- **Set up and Check 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:

- Students attend class 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 in this case student must e-mail the instructor his/her notes at the end of the class. Also, using cell phones and texting during class is not acceptable.
- Reading material and discussion; **Students must complete the reading and post the required summary readings on his/her Canvas page before class.** Each topic discussion will be assigned to a team of two students. See schedule.
- 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%

- Weekly leading discussion, reports, final project and presentation 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.
- 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
Quizzes	Individual;	20	On Canvas
Assignments, Attendance, reading and participation	Individual; Read assigned reading, attend class, field trips, and participate in discussions	20	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; minimum 1000 words. Tell us about you and sustainability in the built environment after completing this class	15	Last week of classes, submit on Canvas
Final project report and presentation or ----- 5-7 minutes Video & report Or 5-7 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.	40	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

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 9/14/2015.

Readings: Each student to take notes on the purpose/main idea/ your thoughts about the reading and develop three questions related to the reading and post notes and questions to his/her/team's Canvas page before class and be ready to discuss it.

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 based on what is new and innovative in sustainability to enhance the class learning opportunity. 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	Team
Welcome and Introduction			
M, 8/24	<ul style="list-style-type: none"> - Welcome & Introduction - Review syllabus - Review use of Canvas - Form groups - Access Building green.com - Show architecture 2030 - 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 Summary Introduction/Presentation 	<p>Syllabus, e-learning course access and utilization Paperless approach</p> <p>http://architecture2030.org/</p> <p>http://video.pbs.org/video/1094055821/</p> <p>http://architecture2030.org/watch-ed-mazria-and-peter-calthorpes-presentation-from-cnu-23/</p> <p>UF sustainability and green building status http://sustainable.ufl.edu/ , www.facilities.ufl.edu</p>	
W, 8/26	<p>Imperatives to create future green building</p>	<p>http://www2.buildinggreen.com/article/three-imperatives-create-future-green-building?</p>	

	Assignment #1	500 words personal statement, What do you know about sustainability in the built environment	
Whole-Systems Thinking Introduction to living Green Building			
M, 8/31	Summary Introduction/presentation Living Building Challenge How to succeed Living Building Challenge Beyond living building Video, Packard Foundation HQ Community Rebuilding and Resiliency	http://living-future.org/sites/default/files/reports/FINAL%20LBC%2030_WebOptimized_low.pdf , start from page 20 https://www2.buildinggreen.com/article/how-succeed-living-building-challenge-12-teams-share-tips http://www2.buildinggreen.com/article/beyond-living-buildings-ilfi-expands-scope-food-products-communities? http://living-future.org/netzero http://www.nyc.gov/html/sirr/html/report/report.shtml	
W, 9/2	Integrated Project Delivery Assignment #2; calculate your carbon footprint	https://www2.buildinggreen.com/article/how-make-integrated-project-delivery-work-your-project http://www.nature.org/greenliving/carboncalculator/	
Looking Beyond Built Environment Green building is about more than buildings			
M, 9/7	Holiday		
W, 9/9	Summary Introduction/presentation Green Roads Institute for Sustainable Infrastructure (ISI), Envision	https://www.greenroads.org/2899/why-greenroads.html http://www.sustainableinfrastructure.org/downloads/index.cfm	
M, 9/14	Summary Introduction/presentation Biophilia and biomimicry Biophilic cities Net-Zero Buildings/Communities	http://www.terrabinbrightgreen.com/reports/14-patterns/#biomorphic-forms-and-patterns http://biophilicities.org/biophilicities.html http://www2.buildinggreen.com/article/problem-net-zero-buildings-and-case-net-zero-neighborhoods?	

<p>W, 9/16</p> <p>Field trip</p>	<p>Homes Save More Energy from Location Than Efficiency</p>	<p>http://www2.buildinggreen.com/article/study-shows-homes-save-more-energy-location-efficiency?</p> <p>http://discovergeos.com/geos-team/ , this project planned to break ground summer of 2015</p> <p>UF Wastewater Treatment Plant located on Gale Lemerand Drive, south of Physics' building, ask for Jared Howard</p> <p>http://campusmap.ufl.edu/</p>	
<p>Teams' Final Paper/Project Topic Due. Present the topic to class. Post a paragraph on your project scope on your Canvas page.</p>			
<p style="text-align: center;">Land Use Planning</p> <p style="text-align: center;">The importance of land-use planning in creating sustainable communities</p>			
<p>M, 9/21</p> <p>Summary Introduction/presentation</p> <p>New Urbanism</p> <ul style="list-style-type: none"> - 10 principles - Benefits - ways to implement it - challenges <p>Conservation subdivision</p> <p>Conservation subdivision design overview</p> <p>Transportation; high speed rail</p> <p>Carbon Savings from Transit</p> <p>W, 9/23</p> <p>Guest Speaker</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/conservationsubs/consubs_pdfs/flawed_processes_flawed_results.pdf</p> <p>http://www.landchoices.org/toptenways.htm</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>Sustainability and Built Environment Alumni, Taylor Cremo</p>	
<p style="text-align: center;">Site and Landscape</p> <p style="text-align: center;">Integrating buildings into the landscape</p>			
<p>M, 9/28</p> <p>Summary Introduction/presentation</p> <p>Are Cool Roofs Green</p> <p>Sustainable Sites Initiative</p> <p>Sustainable site aligned with LEED</p>		<p>http://www2.buildinggreen.com/print/article/are-cool-roofs-green-answer-s-not-black-and-white</p> <p>http://www.sustainablesites.org/rating-system</p> <p>http://www2.buildinggreen.com/article/sites-v2-sustainable-landscapes-aligns-leed?</p>	

<p>W, 9/30</p>	<p>The site and its landscaping and infrastructure</p> <p>Field trip</p>	<p>http://www2.buildinggreen.com/article/sustainable-sites-primers-environmental-building-news?</p> <p>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. Ask for Sally Palmi</p>	
----------------	---	--	--

<p>Rain water Management</p> <p>Rain water and innovative management practices</p> <p>Water Conservation</p> <p>Understanding and conserving what could become the greatest constraint to development</p>			
---	--	--	--

<p>M, 10/5</p>	<p>Summary Introduction/presentation</p> <p>Low Impact Development (LID)</p> <p>Stormwater biofiltration</p> <p>Porous pavement</p> <p>Alternative Water Sources Supply-Side Solutions for Green Buildings</p>	<p>http://www2.buildinggreen.com/article/putting-lid-harmful-stormwater-runoff?</p> <p>http://www2.buildinggreen.com/article/stormwater-biofiltration-s-also-smaller-and-cheaper?</p> <p>http://daily.sightline.org/2012/01/03/the-porous-road-less-traveled/ Find example projects on Pervious Concrete</p> <p>http://www2.buildinggreen.com/print/article/alternative-water-sources-supply-side-solutions-green-buildings</p>	
<p>W, 10/7</p>	<p>Net Zero Water</p> <p>Water Budget</p>	<p>http://www2.buildinggreen.com/article/net-zero-water-and-more-moving-beyond-low-flow?</p> <p>http://living-future.org/node/62/#net</p> <p>http://www2.buildinggreen.com/article/water-budgets-holistic-look-efficiency?</p>	
<p>M, 10/12</p> <p>Review for Atlanta trip</p> <p>Falcon Stadium, 10/15 @3:30</p> <p>Georgia World Congress Center Authority, 10/15 @1:00</p> <p>W, 10/14 to E, 10/16</p>	<p>The Atlanta BeltLine</p> <p>Emory University</p> <p>Serenbe</p> <p>Field trip to Atlanta</p>	<p>http://beltline.org/about/the-atlanta-beltline-project/atlanta-beltline-overview/</p> <p>http://www.sustain.gatech.edu/sustainable-practices</p> <p>http://serenbe.com/ http://www.terrain.org/2012/unsprawl/serenbe/</p> <p>http://newstadium.atlantafalcons.com/2014/11/04/video-stadium-general-manager-gives-update-on-one-of-a-kind-venue/ http://www.gwcc.com/about/</p> <p>This is a required field trip for this course Leaving Gainesville, 10/14 at 6:00 a.m. Leaving Atlanta, 10/16 at 1:00 p.m.</p>	

M, 10/19	<p>Waste Water, Want Water</p> <p>Smarter Irrigation</p> <p>Watersense best management practices</p> <p>Tampa Bay Water</p>	<p>http://www2.buildinggreen.com/article/waste-water-want-water?</p> <p>http://www2.buildinggreen.com/article/smarter-irrigation-parched-landscape?</p> <p>http://www.epa.gov/watersense/commercial/docs/factsheets/general_ci_fact_sheet_508.pdf</p> <p>http://www.tampabaywater.org/tampa-bay-seawater-desalination-plant.aspx</p>	
----------	---	---	--

Quiz one, e-learning on Canvas

Energy Conservation, Efficiency, and Renewable energy Green buildings and communities starts with energy savings

W, 10/21	<p>Summary Introduction/presentation</p> <p>Net Zero Energy Building</p> <p>The Outlook for Renewable Energy in America</p>	<p>http://www.treehugger.com/green-architecture/net-zero-energy-building-certification-finally-defines-what-net-zero-really-means.html</p> <p>http://www.acore.org/outlook2014 , read page3-29</p>	
M, 10/26	<p>Architecture 2030, Road map to net zero emission</p> <p>Solar Farms Offer Renewable Power</p> <p>Wind Power</p> <p>The Problem with Net-Zero Buildings (and the Case for Net-Zero Neighborhoods)</p>	<p>http://architecture2030.org/files/roadmap_web.pdf</p> <p>http://www2.buildinggreen.com/article/solar-farms-offer-renewable-power-rest-us?</p> <p>https://www2.buildinggreen.com/blogs/wind-power-why-it-doesn-t-make-sense-everywhere</p> <p>http://www2.buildinggreen.com/article/problem-net-zero-buildings-and-case-net-zero-neighborhoods</p>	
W, 10/28	<p>Guest Speaker</p> <p>Assignment #3; calculate your energy consumption</p>	<p>Duke Energy and renewable energy/field trip to co-generation plant, Joel George</p> <p>https://www.energystar.gov/index.cfm?fuseaction=home_energystar_yardstick.showGetStarted</p>	

Indoor Environmental Quality			
An unhealthy building/community cannot be a green building/community			
M, 11/2	<p>Summary Introduction/presentation</p> <p>Connection between water conservation and infections</p> <p>Radon in Buildings</p> <p>WELL Building Standards</p> <p>Healing Gardens</p>	<p>http://www2.buildinggreen.com/article/surprising-connection-between-water-conservation-and-deadly-infections?</p> <p>http://www2.buildinggreen.com/article/radon-and-schools-study-denial?</p> <p>http://www2.buildinggreen.com/article/well-building-standard-officially-launches?</p> <p>http://www2.buildinggreen.com/article/healing-gardens-make-hospital-stays-walk-park?</p>	
Material and Resources			
Understanding the environmental impact of what goes into our buildings			
W, 11/4	<p>Summary Introduction/presentation</p> <p>What makes product green</p> <p>Understanding product certifications</p>	<p>http://www2.buildinggreen.com/article/what-makes-product-green</p> <p>https://www2.buildinggreen.com/article/behind-logos-understanding-green-product-certifications-1</p>	
M, 11/9	<p>Can Products Do More Good Than Harm? The Living Product Challenge</p> <p>Building life cycle assessment</p>	<p>https://www2.buildinggreen.com/article/can-products-do-more-good-harm-living-product-challenge</p> <p>http://www2.buildinggreen.com/article/whole-building-life-cycle-assessment-taking-measure-green-building?</p>	
Material and Health			
Understanding the health impacts of what goes into our buildings			
	<p>Beating the red list</p> <p>Building product and health</p>	<p>http://www2.buildinggreen.com/article/take-control-your-materials-four-empowering-lessons-teams-beat-red-list?</p> <p>http://www2.buildinggreen.com/article/building-products-and-health-look-risk-vs-hazard?</p>	

W, 11/11	Holiday		
M, 11/16	"Energy: A Life Story,"	Guest Speaker, Hal Knowles; covers food systems, housing systems, transportation systems, and communication systems.	
W/11/18	Energy management at UF	Guest Speaker, John Lawson	
Building Durability Longer-lasting buildings are greener buildings			
M, 11/23	Summary Introduction/presentation Finding furniture w/o toxic Productivity and Green Buildings Durability: is key component of green building Polished Concrete Outshines Other Flooring Options Building commissioning	http://www2.buildinggreen.com/article/finding-furniture-without-toxic-flame-retardants? http://www2.buildinggreen.com/print/article/productivity-and-green-buildings http://www2.buildinggreen.com/print/article/polished-concrete-outshines-other-flooring-options http://www2.buildinggreen.com/article/verifying-performance-building-enclosure-commissioning?	
Quiz two in e-learning on Canvas			
W, 11/25	Thanksgiving Holiday		
Looking ahead: Climate Adaptation Today's buildings must be adaptable to an uncertain future			
M, 11/30	Summary Introduction/presentation Design for adaptation; living in a climate changing world Resilient Design-Smarter Building for a Turbulent Future Resilient Design: 7 Lessons from Early Adopters	http://www2.buildinggreen.com/print/article/design-adaptation-living-climate-changing-world http://www2.buildinggreen.com/article/resilient-design-smarter-building-turbulent-future? http://www2.buildinggreen.com/article/resilient-design-7-lessons-early-adopters?	
W, 12/2	Pre and Post occupancy review	http://www2.buildinggreen.com/article/why-post-occupancy-review-future-design-and-how-it-can-serve-you-now	

	Assignment # 4	Individual minimum 1000 words. Tell us about you and sustainability in the built environment after completing this class	
M, 12//7 W, 12/9	Final Student Presentations <i>Reports are due on the day of Presentation</i> 5-7 minutes Video & report Or 5-7 minutes Video and presentation	30 minutes presentation including Q/A per team Each team turn in the report before final presentations Videos are highly recommended	