Sustainable Design & Construction CE 469, Spring 2013

Mondays, 6:40 - 9:20 PM, GFS 101

Instructor Office Office Hours	Nate Arnold, LEED AP UGW-110 By appointment	Phone E-mail	(213) 821-4599 nate.arnold@re.usc.edu
TA Office Office Hours	Nan Li KAP 217 TBD	E-mail	nanl@usc.edu

Text:

Required – LEED Reference Guide for Green Building Design and Construction (USGBC, 2009)

Description:

The sustainable design and construction movement has been called the next marketing boom of the new millennium. The US Green Building Council (USGBC) is at the forefront of this movement. In-depth knowledge of green building practices is not only invaluable in reducing environmental impacts and improving our quality of life but also in developing a long term market share and improving economic performance.

This course is composed of independent study and group exercises with proctored weekly discussions/lectures that will cover the technical requirements of nationally recognized LEED Green Building Design and Construction. This course is primarily focused on New Construction & Major Renovations. Additionally, this course will focus on providing an overview of the knowledge required for taking industry recognized Professional Accreditation exams. The course will provide attendees with an understanding of how sustainability is being implemented nationally throughout the design and construction industries to define various levels of sustainable project design, the resources available for successfully achieving green building project certifications, and a review of the LEED Green Building Design and Construction rating system.

Individual and group projects will be administered that identify and move beyond today's current green building strategies to determine the next steps of Green Building. These concepts include: understanding the process of carbon foot printing; calculating the embodied energy of building materials during extraction, processing, manufacturing and transportation; cyclical processes in the design and construction industries that have negative environmental impacts; demolition versus deconstruction practices. Synthesizing and recognizing the importance of these key concepts will better prepare course participants with a collective understanding of the design and construction industries role in reducing our impact on the environment.

Class Focus: The following areas will constitute our core focus:

- Introduction to green-building design strategies and benefits
- When and how to use the appropriate Green Building Rating Systems
- Green building resources and references
- LEED GA and LEED AP preparation
- Advancing Green building technologies and innovations
- Construction industry's sustainable field best practices
- Real-life project examples of achieving certifications by the USGBC
- Identifying the steps of integrating sustainability with Virtual Building and Building Information Modeling (BIM) practices
- Carbon foot printing of construction and related activities
- Understanding and measuring the embodied energy of construction materials

Goals:

- Prepare students to successfully pass the LEED Green AP Exam
- Provide students with a broad learning experience relative to sustainable design and construction

Evaluation:

Students will be graded per the following criteria:

-	Attendance & Participation	10%
	includes field trips and classroom participation	
-	Homework	20%
	students will submit a 2-3 page narrative (with illustrations) regarding a credit follow	ving the
	first lecture regarding the credit section; example provided in class	
-	Quizzes	20%
	in preparation for the LEED Green AP Exam, students will be given a quiz during cla	ass
	following the completion of the credit section	
-	Midterm	25%
	inclusive of sections covered to date	
-	Final (all credit sections)	<u>25%</u>
-	Total	100%

Extra Credit – several possibilities will be available for students to improve their grade on an extra credit basis. Passing the LEED Green AP exam prior to submission of final grades will increase the student's score by one letter grade. Other opportunities, such as additional research and reports, will be offered and judged on a case by case basis.

Course Schedule:

Week	Торіс	Required Reading*
1- 14 Jan 2013	Introduction to Green Building	USGBC.org, GBCI.org
2 – 21 Jan 2013	MLK DAY - NO CLASS	
3 – 28 Jan 2013	Sustainable Sites	Guide: Sustainable Sites
4 – 4 Feb 2013	Water Efficiency	Guide: Water Efficiency
5 – 11 Feb 2013	Energy and Atmosphere I	Guide: Energy and Atmospher
6 – 18 Feb 2013	PRESIDENT'S DAY - NO CLASS	
7 – 25 Feb 2013	Materials & Resources	Guide: Materials & Resources
8 – 4 Mar 2013	Field Trip – TBD	
9 – 11 Mar 2013	MIDTERM EXAM	
10 – 18 Mar 2013	SPRING RECESS – NO CLASS	
11 – 25 Mar 2013	Indoor Environmental Quality	Guide: IEQ
12 – 1 Apr 2013	Innovation in Design and Regional Priority	Guide: Innovation in Design
13 – 8 Apr 2013	Field Trip – TBD	
14 – 15 Apr 2013	Advance Topics 1**	
15 – 22 Apr 2013	Advance Topics 2**	
16 – 29 Apr 2013	Review	
17 – 6 May 2013	STUDY DAYS – NO CLASS	
18 – 13 May 2013	FINAL EXAM (7-9PM)	

* Additional readings may be provided at the end of class in preparation of the following class ** Advance Topics will cover sustainable topics not covered by LEED but may also be use if certain lectures consume more than a single evening.

COURSE COMMUNICATION: BLACKBOARD COURSE MANAGEMENT SYSTEM

The School of Engineering-is using the Blackboard Course Management System for faculty – student communication. You should check Blackboard for additional information regular basis. The course syllabus and general course information have been posted. Additional course lecture assignments notes/materials, further details on assignments and term projects / papers, and general course announcements, will be posted to the folder throughout the semester.

ACADEMIC INTEGRITY

Statement of Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.-5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement of Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A:

<u>http://www.usc.edu/dept/publications/SCAMPUS/gov/</u>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <u>http://www.usc.edu/student-affairs/SJACS/</u>.