Instructor: Todd Lukesh, LEED AP, CGBP, GPR
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415.978.1005 fax
tlukesh@webcor.com

Course Title: Sustainable Design and Construction Practices

Class Meeting: M: 6:30pm-9:00pm

Location: TBD

Course Description:
The sustainable design and construction movement has been called the next marketing boom of the new millennium. The US Green Building Council’s (USGBC) Leadership in Energy and Environmental Design (LEED) rating system is at the forefront of this movement. In-depth knowledge of the LEED rating system is not only invaluable in reducing environmental impacts 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 the LEED Green Building Rating System for New Construction & Major Renovations (LEED-NC). Additionally, this course will focus on providing an overview of the knowledge required for taking the LEED Professional Accreditation exam. The course will provide attendees with an understanding of how LEED is being used nationally throughout the design and construction industries to define various levels of sustainable project design, the resources available for successfully achieving LEED project certifications, and a credit-by-credit review of the LEED Green Building Rating System.

The class will cover:
- Introduction to green-building design strategies and benefits
- When and how to use the LEED-NC, CS, CI, EB, ND, & HC Green Building Rating Systems
- Green building resources and references
- Advancing Green building technologies and innovations
- Construction industry’s sustainable field best practices
- Real-life project examples of achieving LEED certification
- Identifying the steps of integrating sustainability with Virtual Building and Building Information Modeling (BIM) practices
- Review and preparation for the LEED Professional Accreditation examination

(**Please note that the LEED AP exam is offered only thru the USGBC. Details will be covered in class and are available at the LEED Accreditation web page www.gbci.org).**
Course Texts:  

Understanding Sustainable Construction Practices and the (LEED®) Green Building Rating System™, Mike Montoya,
(Or other, more details to follow)

Read this syllabus completely before registering for this course. By registering for this class you commit to the following:

• Be actively engaged in classroom discussions
• Complete reading assignments before classroom discussion
• Come to each seminar prepared to actively discuss the specific topic
• Complete laboratory assignments on-time and to an acceptable level of quality
• Attend ALL scheduled seminars

To participate in this course you must attend all scheduled seminars. One unexcused absence will result in a drop from the course.

Grading:  
Labs / Homework: 40%
Class participation / Quizzes: 20%
Midterm Exam: 20%
Final Exam: 20%

Reading:
The attached Course Outline includes the chapters, from the assigned tests, that will be covered in each class period. Additional reading assignments may be assigned in class. All assigned reading must be completed prior to the corresponding class period to facilitate discussion and the student’s overall understanding of the subject matter. A one paragraph (½-page max) “reading review” or Quiz will be due/conducted at the beginning of each class.

Statement for 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 as early in the semester as possible. Your letter must be specific as to the nature of any accommodations granted. DSP is located in STU 301 and is open 8:30 am to 5 pm, Monday through Friday. The telephone number for DSP is (213) 740-0776.

Laboratory Assignments:
Each lab assignment will be evaluated based primarily on level of accuracy, detail, student understanding, and presentation. Sketches may be simple hand-drawings or prepared with electronic medium but must be legible and completely address the specific topic. Executive summaries and written descriptions are required in each lab assignment and should be no more than ½ page, and drawings are limited to one 8 ½ x 11 page per assignment. All labs must be submitted electronically by their assigned due date. “Hand” drawings are encouraged but must be scanned and submitted electronically.

To effectively answer each question, research is required in addition to the reading assignments; the internet is a great source of information for these assignments. For
credit you must electronically submit your drawing/description along with a brief executive summary.

For each lab read the referenced text section, evaluate each of the lab assignment items, and answer the question(s). It is likely that additional research will be necessary to completely respond to each question. You must specifically reference the source of any outside information in your lab submittal. All answers must be your own work, do not “cut-and-paste” from the internet or copy from any source!! Failure to complete and submit individual and original work will not be accepted and counted as 0 credit.

For full credit each lab must include:
1. Name, Lab number, date, class number
2. Short Executive Summary (with publication request if applicable)
3. Drawing or Description required
4. Cited information sources

Homework and lab assignments are to be turned in at the beginning of the class on the date due. Late homework assignments will not be accepted. Failure to turn in a homework assignment on-time will result in a grade of 0 for that assignment. Additional in-class individual and group assignments and quizzes may be assigned.

Lab 1
The USGBC has several building certification programs for encouraging sustainable design and construction practices in different types of buildings, for example LEED – NC for New Construction and major renovation of commercial buildings. After reading the USGBC manual assignment and referencing the web site, list each of the building certification programs available or in the process as pilot development (you must visit www.USGBC.org to get the most up to date list), along with a brief description of each. Your descriptions should include citing specific project examples, locations, building type, square footage, proposed value, etc for each rating systems.

Lab 2
Provide a simple sketch (hand drawings are acceptable but must be submitted electronically) that best illustrates any TWO of the following sections from your assigned reading:
- Any illustration of a soil remediation technique including, but not limited to, bio-venting, soil flushing, or solar detox.
- Any illustration of a heat island effect strategy including, but not limited to, landscaping/structure shading of low SRI surfaces, high reflectance materials for hardscaping and roofs, or vegetated surfaces for roofing, hardscape and/or paving.
- Any illustration of light pollution remediation
- Any illustration of the effects of building orientation

Lab 3
Provide a simple sketch (hand drawings are acceptable but must be submitted electronically) that best illustrates any TWO of the following sections from your assigned reading:
- Illustration of any BMP including, but not limited to, basins, bio-swales, porous paving, grass paving;
• Any illustration of a vegetative roof;
• Any illustration of rainwater harvesting; or
• Any illustration of greywater harvesting including, but not limited to, mechanical or natural processes.

**Lab 4**
Provide a simple sketch (hand drawings are acceptable but must be submitted electronically) that best illustrates **TWO** of the following concepts from your assigned reading:

- Passive solar heating or cooling
- Geothermal heat generation
- Solar heat gain
- Thermal mass (heating and cooling)
- Sustainable power generation including, but not limited to, solar, geothermal, wind, tidal flux, etc.

**Lab 5**
Provide a description that best illustrates **ONE** of the following sections from your assigned reading. Your answer must include a description, example and consider/discuss quality, cost, and environmental impact (positive and negative.)

- Use of recycled content building materials
- Rapidly renewable building material products
- FSC Lumber
- Composite/alternative material use

**Lab 6**
Provide a simple sketch (hand drawings are acceptable but must be submitted electronically) using the plans (drawings will be distributed in class) of a passive ventilation strategy. All ideas are welcome but they must consider practicality. Your answer must include the prevailing wind direction in your consideration as well as the effects of heat gain/loss, location of windows to maximize air flow, etc.

**Lab 7**
Download the LEED for new construction “v2.2 Credit Checklist” from the USGBC web page. Using the preliminary plans (drawings will be distributed in class) and evaluate each potential credit. “Maybe’s” are okay but must include a discussion of why it is or is not possible and recommendations/ideas for achieving credit for each point. The credit evaluations must also include a discussion of viable cost implications.

**Lab 8**
Develop a Construction LEED manual that identifies project consultant responsibility for LEED credits on a LEED project (project will be identified in class). For example, an Architect would be responsible for submitting documentation for SS Credit #1; a Contractor will be responsible for submitting the proper documentation for MR Credit 2.1 & 2.2, etc. Identify the list of credits and accurately associate the correct consultants by each credit. (On particular credits there may be multiple parties responsible for submission – note that when applicable). Your LEED checklist and narratives must also identify what information will be needed for each credit submission to qualify for LEED credits.
Class Participation:
Students are **REQUIRED** to attend all seminars and group meetings both physically and mentally. Students will be graded on attendance and active participation in the assignments and discussions. Students are expected to maintain an acceptable level of professionalism that exemplifies courtesy and mutual respect in the class room and groups at all times. Discourteous and disruptive behavior will not be tolerated. The following specific guidelines for proper classroom conduct are expected at all times. Students who violate these rules will be asked to leave the room.

- Always arrive on time
- Do not talk or whisper with fellow students during lecture or any other inappropriate time
- Do not read newspapers, books, or do homework during lectures
- No cell phones/pagers
- Do not eat or sleep during class
- At the end of the period do not cause a disturbance by packing up your things or by starting to leave before the class is dismissed

Guest Speaker Presentations:
Guest speakers that are invited to speak in our course are highly respected in their lines of work in the design and construction industries. Come prepared to become actively engaged in the conversations. These are the experts and much can be gained from their experiences. They deserve our utmost respect. These sessions can also be used as additional networking and employment resources for internships and full-time employment. Come prepared.

Course Outline – Tentative schedule **may be readjusted with advanced notice** based on speaker availabilities.

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<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic Description</th>
<th>Reading Assignment</th>
<th>Due</th>
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<tbody>
<tr>
<td>1</td>
<td>Holiday</td>
<td>Labor Day - No Class</td>
<td>Forward and Introduction (via email)</td>
<td>TBD</td>
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<tr>
<td>2</td>
<td>9/1</td>
<td>Sustainable Sites</td>
<td>Course Introduction SS Prereq 1, SS Credits 1-8</td>
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<td><strong>Guest Speaker: Dan Geiger (Executive Director of USGBC-NCC)</strong></td>
<td>Text TBD</td>
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<td>3</td>
<td>9/8</td>
<td>Water Efficiency Quiz #1</td>
<td>WE Credit 1.1-3.2</td>
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<td>4</td>
<td>9/15</td>
<td>Materials and Resources</td>
<td>MR Prereq 1, MR Credit 1-7</td>
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<td><strong>Guest Speaker:</strong> Dan Geiger (Executive Director of USGBC-NCC)</td>
<td>Text TBD</td>
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<tr>
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<td>6</td>
<td>9/29</td>
<td><strong>Guest Speaker:</strong> Chris Plue (Webcor – VP of Concrete Operations)</td>
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<td>LEED AP examination, LEED online submittal process</td>
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