

# PDC 901

## Integrated Approach to Sustainable Planning, Design, and Construction

### Spring 2013

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<b>Instructor:</b>	Dr. Sinem Korkmaz 201D Human Ecology Bldg., 517-323-3252 Email: <a href="mailto:korkmaz@msu.edu">korkmaz@msu.edu</a>
<b>Office Hours:</b>	1:00 – 3:00 p.m., Wednesdays, or by appointment
<b>Credits:</b>	3

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#### **Meeting Times/Locations:**

Wednesdays      9:10 a.m. - 12 p.m.      140 Natural Sciences Bldg

Course Web Site: [www.angel.msu.edu](http://www.angel.msu.edu)

#### **Course Description:**

This course focuses on integrated approach to planning, design, and construction with emphasis on development of sustainable built environment. The course is designed to help students gain an understanding of sustainability from economic, social, and environmental perspectives with a specific focus on environmental sustainability. The strategies and technologies for environmentally sustainable buildings are presented in this course from planning, design, and construction perspective. As a result of this course, students will gain a working understanding of how to minimize the impacts of buildings on the environment through reading, discussion, lectures, and active learning projects. This course is also designed to help students become familiar with various building assessment systems with a specific focus on Leadership in Energy and Environmental Design (LEED®) system. The course will emphasize collaboration and interdisciplinary aspects of planning, design, and construction for sustainability.

#### **Course Objectives:**

Upon completion of the course, students will:

1. Develop the ability to communicate the benefits of environmentally sustainable buildings to decision makers;
2. Be prepared to become productive contributors to environmentally sustainable building project teams through knowledge of the sustainable building process and multidisciplinary collaboration skills;
3. Obtain the required skills to continue learning about sustainable buildings as the field evolves;
4. Gain knowledge on integrated project delivery practices, its applications, and how it facilitates processes for better performing projects through integration of planning, design, and construction activities;
5. Gain a working familiarity with the primary strategies for environmentally sustainable buildings: sustainable site development, water conservation, energy and atmosphere, materials and resources, and indoor environmental quality, and innovation and design process.

### **Course Material:**

1. Kibert, Charles J. (2008). Sustainable Construction: Green Building Design and Delivery, Wiley, NY. –previous edition: TH880 .K53 2005-
2. Readings posted on the course website.
3. Lecture notes and assignments will be handed out in the class or will be posted on the course site on ANGEL.
4. Web-based sources.

### **Suggested Readings:**

1. Krygiel, E., Nies, B., (2008). Green BIM: Successful Sustainable Design with Building Information Modeling, Wiley, Indiana.
2. LEED – New Construction, Reference Guide, v.3.
3. Vallero, D., Brasier, C., (2008). Sustainable Design: The Science of Sustainability and Green Engineering, Wiley, NY.
4. Yudelson, J., (2008). The Green Building Revolution, Island Press, Washington.
5. McDonough, W., Braungart, M., (2002). Cradle to Cradle: Remaking the Way We Make Things, North Point Press.
6. Mendler, S., William, O., (2000). The HOK Guidebook to Sustainable Design, Wiley, NY.
7. 7group and Reed, B. (2009), The Integrative Design Guide to Green Building: Redefining the Practice of Sustainability (Sustainable Design), Wiley, New Jersey.

### **Online Resources:**

- \* Ecological footprint <http://www.myfootprint.org/>
- \* Carbon footprint <http://www.carbonfootprint.com/>
- \* Whole Building Design Guide <http://www.wbdg.org/>
- \* National Institute of Building Sciences <http://www.nibs.org/>
- \* LEED <http://www.usgbc.org>
- \* Green Globes <http://www.greenglobes.org/>
- \* High Performance Green Building Database <http://www.eere.energy.gov/buildings/highperformance/>
- \* Environmental Building News <http://www.buildinggreen.com>
- \* MI Department of Environmental Quality <http://www.michigan.gov/deq>
- \* [www.greenseal.org](http://www.greenseal.org)
- \* [www.greenguard.org](http://www.greenguard.org)
- \* [www.thenaturalstep.org](http://www.thenaturalstep.org)

### **Writing:**

This course places a special emphasis on improving the student writing. The instructor will look for critical thinking (e.g. organization and content), use of language, relevance to the topic, and the quality of used references in assignment evaluation. Therefore, students should place special emphasis on their writing for the assignments.

### **Class Conduct:**

1. **Academic Dishonesty:** Generally, instances of academic dishonesty will result in failure of the class. See university policies at <http://www.msu.edu/unit/ombud/dishonestyFAQ.html>
2. **Code of Teaching Responsibilities:** This class will meet the University's Code of Teaching Responsibilities. This document can be found at <http://www.msu.edu/dig/FACULTY/instruction.html#code>

### **Attendance Policy:**

Students should attend all classes. Students are encouraged to participate in the class discussion and ask questions. If the student misses a class, he/she should ask a friend to pick up your copy of the handout and other announcements. The instructor does not keep extra copies of the handouts.

### **Accommodations for Students with Disabilities:**

Students with disabilities should contact the Resource Center for Persons with Disabilities to establish reasonable accommodations. For an appointment with a disability specialist, call 353-9642 (voice), 355-1293 (TTY), or visit [MyProfile.rcpd.msu.edu](http://MyProfile.rcpd.msu.edu).

### **Religious Observance**

If a student wishes to be absent from class to observe a religious holiday, the student must make arrangements with the instructor at least one full week in advance of the class to be missed.

### **Course Guidelines:**

- Assignments will be given based on course material and readings.
- In general, if you expect to be delayed in coming to class, you must inform the instructor beforehand of your particular need and situation.
- The due date for all submittals will be firm. An electronic copy of each submittal will be submitted on the ANGEL site of the course in the assigned folders ***before the start of class on the due date***. Following penalty system will apply to delays:
  - a. Each 24 hours delay after the due date and time - 20%;
  - b. Submission after the due time will be considered as one-day delay;
  - c. No submission will be accepted after the graded work is returned to the class.
- Timely submission of all assignments are required.
- No makeup assignment will be given.
- Since the class policy is no makeup assignments, it is the student's responsibility to plan ahead to avoid conflicts in advance of the submittal and exam dates. In case of genuine emergency, the students should bring it to the instructor's notice with appropriate substantiation. Excuses related to minor sickness, preplanned doctor's appointment, employment, sports, ROTC, student club activities, and other extracurricular activities will not be accepted.
- Any act of academic dishonesty, especially plagiarism in the submitted assignments, will result in failing the entire course. See university policies at <http://www.msu.edu/unit/ombud/dishonestyFAQ.html>
- Students are encouraged to ask questions about the course material and the assignments' content at any time during the class, in the instructor's office hours, and/or via e-mail. It is the students' responsibility to comprehend the requirements' of the class and the assignments. The instructor will not be responsible for the results of lack of understanding these requirements.
- Students are encouraged to use the ANGEL system if they decide to e-mail a question to the instructor regarding the course material and/or the assignments, so that the other students can also benefit from this dialog.
- ANGEL will be actively used for this course. Students are responsible for keeping track of the announcements, course material, etc. on the ANGEL course website. Therefore, students should enable e-mail forwarding option on their ANGEL settings to receive the course updates in a timely manner.

**Grading Distribution:**

The final grade in this course will be based on attendance, class participation, debate, case study discussions, and assignments. A brief description of these are given below:

1. Answers to discussion questions on ANGEL and participation
2. Debate
3. LEED project
4. Integrated project delivery – case studies
5. Final project

The weights of these assignments in final evaluation for the course grade are as follows:

<u>Weight</u>	<u>Activity</u>	<u>Overall</u>	
10%	Discussion Qs / Class Participation	4.0: 94%	1.5: 72.5
10%	Debate	3.5: 87.5%	1.0: 70%
35%	LEED team project	3.0: 80%	
15%	Integrated Project Delivery	2.5: 77.5%	
30%	Final Project	2.0: 75%	

**SIRS (Student Instructional Rating System):**

Michigan State University takes seriously the opinion of students in the evaluation of the effectiveness of instruction, and has implemented the SIRS (Student Instructional Rating System) process to gather student feedback. This course utilizes the online SIRS system. You will receive an e-mail sometime during the last two weeks of class asking you to fill out the SIRS online form at your convenience. Please note the final grade for this course will not be accessible on STUINFO for seven days following the University grade submission deadline published by the Office of the Registrar unless the SIRS online form has been filled out. You will have the option in the online SIRS form to decline to participate in the evaluation of the course we hope, however, that you will be willing to give us your frank and constructive feedback so that we may instruct students even better in the future.

## Tentative PDC 901 Topical Outline

Week / Date		Topic	Readings & Speakers	Key Dates for Assignments / Activities
#1	(1/9)	Introduction / What is sustainability anyways?	Ch – 2	Ecological Footprint / Homeland- Roberta Grossman Video
#2	(1/16)	Making the case for green – Intro. to Sustainable Built Environment	Ch - 1	<b>In class Debate</b>
#3	(1/23)	Sustainable Cities and Neighborhoods / Legislation	Guest Speakers	LEED team project assigned
#4	(1/30)	LEED Introduction / Water	Ch – 8	<i>Teamwork on LEED Project</i>
#5	(2/6)	Sustainable Sites / Energy	Ch- 6	<i>Teamwork on LEED Project</i>
#6	(2/13)	IEQ / ID / Regional Priority	Ch – 10	<i>Teamwork on LEED Project</i>
#7	(2/20)	Materials & Resources / Construction Perspective	Ch – 9 / Ch- 11 Guest Speaker	<i>Teamwork on LEED Project</i>
#8	(2/27)	Synergistic Practices Student Presentations		<b>LEED team project mid-term DUE</b>
#9	(3/13)	Discussion on LEED Buildings Performance & Delivery Process	Site Visit to LEED certified facility	
#10	(3/20)	Integrated Approach to Project Delivery Intro. to Project Delivery / Design Management - BIM / Delivery Metrics	Ch – 4	Research project assigned Project delivery cases assigned <i>Teamwork on LEED project</i>
#11	(3/27)	Integrative Design and Practices/ LCA - LCC		<i>Teamwork on LEED project</i>
#12	(4/3)	Student Presentations / Research Findings on Green Project Delivery		<b>Project delivery case presentations DUE</b> <i>Teamwork on LEED Project</i> IPD Discussion Qs on Cases Assigned - ANGEL
#13	(4/10)	IPD / WBDG Team Integration Specifics	Autodesk Case	Discussion on IPD Cases Role Play of Project Delivery <i>Teamwork on LEED Project</i>
#14	(4/17)	Lean and Green / BIM / Green Building Assessment Systems, / Revisiting Sustainability	Guest Speaker: IPD Ch - 3	Discussions based on reading <b>Integrated Delivery of a Dinner Workshop &gt; Planning</b>
#15	(4/24)	<b>FINAL LEED Project DUE / STUDENT PRESENTATIONS</b>		

\* (4/30) Tuesday – Finals Week: **Final Research Project Reports DUE at 9:45 AM**