

University of Florida
ME Rinker Sr. School of Building Construction

BCN 6585 Sustainable Construction

W, Periods 10-E1 (5:10 PM – 7:40 PM) RNK 215

Syllabus

This course addresses the application of the sustainable development paradigm to the built environment. Sustainable development includes reducing the impacts of human activities on natural ecosystems and understanding the role these ecosystems have in the economy and on human welfare. It involves understanding the lessons that human society can learn from natural systems and how these lessons can help provide a good quality of life for the planet's population. This course will cover the fundamental concepts of sustainable development in the built environment; the environmental / resources issues and industrial / construction metabolism with examples. It also discusses environmental ethics and environmental justice; ecological / environmental economics including Life Cycle Costing; building assessment (frameworks) and ecolabels. Additionally, this course develops basic knowledge about energy systems, exergy, entropy, energy conservation and renewable energy; Life Cycle Assessment, embodied energy, energy, and materials. Concepts such as New Urbanism, bioclimatic design principles, ecological concepts, passive design strategies will be discussed. This course will use a mix of class lectures, guest lectures, videos, additional reading materials, and other approaches for instruction.

Course Objectives

- Understand the concept of sustainable development or sustainability in the built environment.
- Learn about the different sustainability frameworks used worldwide, their strengths and weaknesses.
- Learn about the fundamental resources issues related to the built environment.
- Understand concepts such as New Urbanism, passive design strategies, technologies, ecological principles, and energy conservation measures for efficient buildings.



Image Credits: Papermasters.com

Method. Class lectures, guest lectures, videos, quizzes, exams, course papers and group project.

Course Website. Sakai: <http://lss.at.ufl.edu>

Class Attendance. Attendance at all class meetings is mandatory. Unexcused absences will result in a half letter grade reduction.

Late Assignments. Assignments are due to the instructor by the start of class on the due date. A 40% deduction will be imposed for assignments up to 24 hours late. Assignments more than 24 hours late will receive no credit.

Disruptive Behavior Policy. Students engaging in disruptive behavior will be asked to leave the classroom. Use of cell phones and computers without permission of the instructor is considered disruptive behavior.

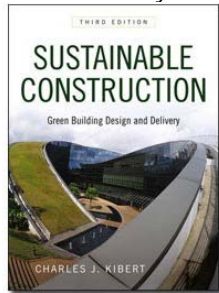
Honor Policy. It is Rinker School policy that any incidence of cheating, copying, signing rosters for others, or other attempts to deceive will be penalized by course failure.

Instructor

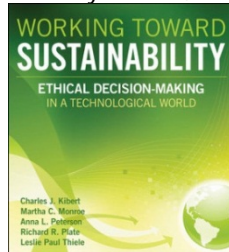
Charles J. Kibert
Weekly office hours at RNK 342
MWF noon – 2:00 PM or by appointment
Email: ckibert@ufl.edu

Textbooks

1. ***Sustainable Construction: Green Building Design and Delivery***. Third Edition, Charles J. Kibert, New York: John Wiley & Sons, 2012.



2. ***Working Toward Sustainability: Ethical Decision Making in a Technological World***, CJ Kibert et al, New York: John Wiley & Sons, 2011.



3. ***Environmental Building News (EBN)***
Available online and accessible in several ways:
 - o If you have a Gatorlink account and are logged in on campus, simply go to the Building Green website <http://www.buildinggreen.com> and you will be automatically connected to Environmental Building News.
 - o If you have a Gatorlink account and are off-campus, log in using the VPN and then go to the Building Green website.

REQUIREMENTS

Course papers (3 x 100 pts each)	300 points
Course problems (3 x 50 pts each)	150 points
Oral presentation (1 paper)	25 points
Group Project	100 points
Oral presentation (project)	25 points
Course Blog/Portfolio	100 points
Quizzes (10 points each)	Variable
Total Points (max)	700 points + var

Course Papers (3 papers, 100 points each)

- o Must be 1000 +/- 10% words in length.
- o Should have a minimum of 10 citations, at least 7 must be from journal articles. Turnitin will scan papers.

Course Problems (3 problems, 50 points each)

1. Life Cycle Costing (LCC) Model
2. Life Cycle Assessment (LCA) Model
3. Building Water Model

Blog/Portfolio (100 points): Use MS Word Notebook template, take notes for each class session, add links, photos, etc. Two pages for each of the first 12 classes.

Group Project (1 project, 100 points each)

- o Team will consist of three or four students.
- o Group Project overview will be discussed by the instruction in class.
- o Group Project Report should be 1500 words min. *Course Papers, Problems, and Group Project Reports must be your (or group's) original work and must not have been submitted to other courses in any other educational institution.*

Format for course papers: Follow the American Psychological Association (APA format) available at <http://apastyle.org>

Quizzes (10 points each)

At the start of class, students may be quizzed on the reading materials assigned for that class. The only materials the student can use in taking the quiz are their personal handwritten notes on the readings.

Grading Method

Grading will be based foremost on the quality of the submissions by the students. All references must be fully specified at the end of each assignment and keyed into the written text by author, year, and page number(s) if the citation is a book or journal. Spelling and grammar are also subject to evaluation. Presentations will be graded based on the quality of the student's oral presentation, the quality of the graphics and written material supporting the presentation, and quality of integration of the team presentation.

Grading based on points earned as a percentage of total points. A: 95 and up, A-: 92-94 B+:88-91, B: 83-87, B-: 80-82, C+: 77-79, C: 73-76, C-: 70-72, D+: 67-69, D: 63-66, D-: 60-62, E: 59 or below.

Course Schedule

- 1 Introduction: Sustainability in the Built Environment
- 2 Environmental / Resources Issues & Industrial / Construction Metabolism
- 3 Ethics of Sustainability and Environmental Justice
- 4 Ecological / Environmental Economics and Life Cycle Costing (LCC)
- 5 Building Assessment and Ecolabels
- 6 Sustainability Frameworks
- 7 Sustainable Communities and Sustainability Indicators
- 8 Energy Systems, Exergy, Entropy, Energy Conservation and Renewable Energy
- 9 Life Cycle Assessment (LCA), Embodied Energy, Energy and Materials
- 10 Water Resources, Wastewater and Stormwater
- 11 Urban Planning, Land Development, New Urbanism and Landscaping
- 12 Design for the Environment, Ecological Principles, Passive Design and Climatic Design

DUE DATES BCN 6585 PRINCIPLES OF SUSTAINABLE CONSTRUCTION

Module	Assignment	EBN	Date
0			1/6
1		Dec 2015	1/13
2			1/20
3	Course Paper 1 Due	Jan 2016	1/27
4			2/3
5	Course Problem 1 Due	Feb 2016	2/10
6			2/17
7	Assign Group Project		2/24
8		Mar 2016	3/2
9	Course Paper 2 Due		3/16
10	Course Problem 2 Due	April 2016	3/23
11	Course Problem 3 Due		3/30
12	Course Paper 3 Due		4/6
	Group Project and Presentation	Dec 2015	4/13
	Group Project and Presentation		4/20

Course Paper 1: State of the Art of Sustainable Construction

Perform research and describe the current best practices in designing and building a high performance building. Provide a case study (2012 or later) that illustrates these best practices.

Course Paper 2: Green Building Codes and Standards

Describe the emergence of green building codes such as the IgCC and Standards such as ASHRAE 189.1 that illustrate a shift in thinking about green buildings from building assessment by tools such as LEED to codifying the practice and making it mandatory.

Course Paper 3: Student choice of topic. Provide abstract to the Instructor prior to writing it.

Course Problem 1: Life Cycle Costing

Course Problem 2: Water Modeling

Course Problem 3: Life Cycle Assessment and Carbon Footprinting

Group Project: To be assigned by the Instructor near mid-semester