

BCN 6585

Sustainable Construction

Spring 2024

This course was originally developed by late Dr. Charles J. Kibert, Emeritus Professor.

INSTRUCTOR: Ravi S. Srinivasan PhD, Certified Energy Manager, LEED AP, GGP Professor, M.E. Rinker, Sr. School of Construction Management
University of Florida

OFFICE: RNK 304B

OFFICE HOURS: Tuesdays & Thursdays (before/ after class periods); and, by appointment

CONTACT: For email messages to instructor, use elarning.ufl.edu

CLASS SESSIONS: Tuesdays Period 4-5 (10.40 AM to 12.35 PM); Thursdays Period 4 (10.40 – 11.30 AM)

ROOM: Rinker 210

COURSE WEBSITE: <https://elarning.ufl.edu>

PURPOSE OF COURSE

This course will introduce the fundamental concepts of sustainable development in the built environment; environmental / resources issues; and industrial / construction metabolism with examples. The course also addresses environmental ethics and environmental justice; ecological / environmental economics including Life Cycle Costing; building assessment (frameworks) and ecolabels; building health; and the application of Life Cycle Assessment (LCA).

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 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, videos, additional reading materials, and other approaches for instruction.

COURSE OBJECTIVES FOR STUDENTS

- Understand the concept of sustainable development or sustainability in the built environment.
- Learn about the different sustainability frameworks used worldwide.
- Learn about the fundamental resources and 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.

COURSE LEARNING OUTCOMES:

Upon completion of the course students will demonstrate their:

- Understanding of the application of the sustainable development framework to the design and construction of the built environment
- Ability to apply the principles of sustainable construction to decisions regarding the built environment.
- Knowledge of life cycle costing, life cycle assessment, net zero strategies, green building assessment systems, and the environmental impacts of the built environment.

READING MATERIAL

1. "Sustainable Construction: Green Building Design and Delivery," 5th Edition, Charles Kibert, John Wiley & Sons, 2022.
2. Environmental Building News, electronic journal, available through UF e-Journals as www.uflib.ufl.edu or at www.buildinggreen.com if using UF VPN.

For some sessions, students must post comments regarding these readings prior to class using the website's Discussion board. You will also be notified when you must complete a short quiz on the reading material before class session.

ATTENDANCE POLICY

Absences: Students are responsible for satisfying all academic objectives as defined by the instructor. Absences count from the first class meeting.

In general, acceptable reasons for absence from class include illness, serious family emergencies, special curricular requirements, military obligation, severe weather conditions, religious holidays, participation in official university activities, and court-imposed legal obligations (e.g., jury duty or subpoena). Other reasons also may be excused.

You cannot attend classes unless you are registered officially or approved to audit with evidence of having paid audit fees. The Office of the University Registrar provides official class rolls to instructors.

If you do not attend at least one of the first two class meetings of a course or laboratory in which you are registered, and you have not contacted the department to indicate your intent, you can be dropped from the course. You must not assume that you will be dropped, however, if you fail to attend the first few days of class. By posting a notice in the department office, the department will notify you in you have been dropped from the course. You can request reinstatement on a space-available basis if you present documented evidence.

The University recognizes the right of the individual professor to make attendance mandatory. After due warning, professors can prohibit further attendance and subsequently assign a failing grade for excessive absences.

Class sessions consist of brief lectures/presentations by the instructor, class discussions, student presentations, other hands-on work, and guest speakers. You are expected to attend all classes and participate fully. The instructor will not summarize the required readings, but we will use them as a platform for discussion and critique.

To minimize distractions, all cell/smart phones must be turned off during class sessions. Please bring laptops to class so that you can refer to reading, and video material during class sessions. Otherwise, laptops must be turned off during class.

SURPRISE QUIZZES, COURSE PAPERS, MODULE ASSIGNMENTS, AND GRADING POLICY

REQUIREMENTS

Each module has a graded Module Assignment for evaluating your interpretation of assigned readings and other activities plus your own personal research into the topic. You will also have two Research papers due at the midpoint and end of the course.

GRADING POINTS

Course papers (2 x 200 pts each), 400 points
Module Assignments (12 X 40 pts each), 480 points
Surprise Quizzes (6 x 20 pts each), 120 points
Total Points (max), 1000 points

Surprise quizzes will be held in class, while the assignments will be submitted electronically to the instructor via the course website. The course projects are considered late if it arrives a minute past the due date. Final submissions after the stated deadline will be deducted 10% for every day late.

Policy for assigning grade points to letter grades will follow UF grading policies, which can be found at: catalog.ufl.edu/ugrad/current/regulations/info/grades.

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

MAKE-UP POLICY

There is no make-up policy for missing quizzes or exams with the exception of medical and religious reasons.

GETTING HELP

For issues with technical difficulties for e-learning in Sakai, please contact the UF Help Desk at:

- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- <https://lss.at.ufl.edu/help.shtml>

Should the final project submission occur after the due date solely as a result of technical issues, a request to the instructor for consideration **must** be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You must e-mail your instructor within 24 hours of the technical difficulty.

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

Should you have any complaints with your experience in this course please visit <http://www.distance.ufl.edu/student-complaints> to submit a complaint.

UF AND GENERAL POLICIES

University policy on 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 final project 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.

University policy on academic misconduct. Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

Course evaluations. Students are expected to provide feedback on the quality of instruction in this course based on ten criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester; but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu>.

Netiquette: communication courtesy. All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Please refer to: <http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

Religious observances. Please inform the instructor of any religious holidays or other days of special religious significance that may interfere with your participation in this class so that she can accommodate these events.

Special consideration. The principle of equal treatment of all students is a fundamental guide in responding to requests for special consideration. No student shall be given an opportunity to improve a grade that is not made available to all members of the class. This policy is not intended to exclude reasonable accommodation of verified student disability or the completion of work missed due to religious observance, verified illness, or absence due to circumstances beyond your control. Reconsideration of subjective judgments of an individual student's work will be done only if all students in the class can be and are given the same consideration.

Sexual harassment. Sexual harassment is reprehensible and will not be tolerated by the University. It subverts its mission and threatens the careers, educational experience, and well being of students, faculty, and staff. The University will not tolerate behavior between or among members of the university community that creates an unacceptable working environment.

Stress. The academic year presents many opportunities as well as challenges, sometimes resulting in increased stress. If at any time you feel anxious or stressful, please contact the instructor or the university's Counseling + Wellness Center at <http://www.counseling.ufl.edu/cwc/Default.aspx>.

COURSE TOPICS AND SCHEDULE

Topics/dates subject to change upon availability of guest speakers

- 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