

CNST-1510: GREEN BUILDING & SUSTAINABILITY I

Cuyahoga Community College

Viewing: CNST-1510 : Green Building & Sustainability I

Board of Trustees:

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Academic Term:

Fall 2023

Subject Code

CNST - Construction Engineering Tech

Course Number:

1510

Title:

Green Building & Sustainability I

Catalog Description:

Introduction to Green Building and sustainability issues. Study of current practices, systems, and materials used in the construction of Green buildings. Recognition of planning and design features that enhance the energy efficiency of a building and its environment. Overview of Green Building Rating Systems.

Credit Hour(s):

3

Lecture Hour(s):

3

Requisites

Prerequisite and Corequisite

None.

Outcomes

Course Outcome(s):

Recognize and codify the effects of Green Building on the environment.

Objective(s):

1. Prepare reports from green building literature and Internet topic searches.
2. Discuss new developments in the construction industry that impact energy efficiency.
3. Identify building design features that can reduce energy usage.
4. Recognize how an integrated approach to building design is important for green buildings.
5. Examine the sensitivity of material effects on the environment.

Course Outcome(s):

Differentiate between choices of sustainable systems and materials for construction.

Objective(s):

1. Prepare technical documentation that compares cost and energy savings for common building systems.
2. Associate green building information and practices with corresponding green building focus groups.
3. Discuss new developments in the construction industry that impact energy efficiency.
4. Identify building design features that can reduce energy usage.
5. Locate sustainable material details and specifications.

Course Outcome(s):

Summarize and differentiate the LEED rating systems used for buildings.

Objective(s):

1. Create a Green rating checklist that can be used for individual situations.
 2. Recognize focus groups for Green Building nationally and locally.
 3. Prepare reports from Green Building literature and Internet topic searches.
 4. Identify home rating systems for energy efficiency.
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Methods of Evaluation:

- a. Course topic discussions
- b. Written assignments
- c. Exams
- d. Written reports
- e. Participation

Course Content Outline:

- a. Background of Green Building, and sustainability
 - i. Resource Efficiency
 - ii. Energy Consumption
 - iii. Demolition/Construction Practices
 - iv. Recycling
- b. Future considerations and adaptations of Green Building and sustainability
 - i. Green products and materials
 - ii. Green specifications
 - iii. Green design guidelines
 - iv. Green Building rating systems
 - v. Sustainability for facilities management
- c. Design guidelines for Green Building
 - i. Examples of sustainable design buildings
 - ii. Residential green building guidelines from National Association of Home Builders (NAHB)
 - iii. Green Advantage Environmental Certification
 - iv. Site waste reduction & recycling
 - v. Renewable and advanced power
 - vi. Life Cycle Assessment
- d. Products and materials for Green Building
 - i. Environmental and site conditions
 - ii. Structural component systems
 - iii. Building envelope
 - iv. Interior finishes
 - v. Furniture
 - vi. Facilities maintenance
 - vii. Indoor air quality
- e. Specifications for Green Building products and materials
 - i. GreenSpec®
 - ii. Construction Specifications Institute (CSI) MasterFormat™ 2004 divisions
- f. Green Building and energy efficiency rating systems
 - i. United States Green Building Council (USGBC) Leadership in Energy & Environmental Design (LEED®)
 - ii. LEED® Certification process
 - iii. LEED® Accredited professionals
 - iv. Green Globes
 - v. EPA Energy Star
 - vi. National Association of Home Builders
- g. Sustainability and Green Building focus groups
 - i. United States Green Building Council
 - ii. Cleveland Green Building Coalition
 - iii. City of Cleveland Sustainability Program

Resources

Alison Kwok & Walter Grndzik. (2018) *The Green Studio Handbook: Environmental Strategies for Schematic Design*, New York: Architectural Press.

Building Design+Construction. (2007-10-01) *Green Buildings Research White Paper*,

Kibert, Charles J. (2022) *Sustainable Construction: Green Building Design and Delivery*, Hoboken, NY: Wiley.

Montoya, Michael. (2010) *Green Building Fundamentals*, Columbus, OH: Pearson Publishing.

Wilson, Alex and Piepkorn, Mark. (2008) *Green Building Products, The GreenSpec Guide to Residential Building Materials*, New York, NY: New Society Publishers.

Theis, Tom. (2015) *Sustainability: A Comprehensive Foundation*, Open Textbook Library <https://open.umn.edu/opentextbooks/textbooks/96>

Resources Other

- U.S. Green Building Council Youtube Channel. (2022) <https://www.youtube.com/c/usgbc/videos> (<https://www.youtube.com/c/usgbc/videos/>)

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