

Module Overview

This module covers the impacts of the built environment on the green environment and introduces methods to reduce impacts on the green environment. It also explains how to apply the principles of a green building rating system.

Prerequisites

Before you begin this module, it is recommended that you successfully complete *Your Role in the Green Environment*, Module 70101-09.

Objectives

Upon completion of this module, you will be able to do the following:

1. Identify the short- and long-term impacts traditional construction practices have on the natural and human environment.
2. Describe the common problems encountered during the construction process that negatively impact sustainability factors for the project.
3. Propose ways to improve the sustainability of the project during the construction phase.
4. Develop different ways to achieve sustainability objectives when desired products or technologies are unavailable.
5. Describe the sustainability benefits of innovative actions that might earn a LEED innovation credit.
6. Use product information to evaluate whether products meet a given sustainability standard.
7. List and describe trade-offs for different products in terms of materials-related LEED credits.
8. Predict the impact of material substitutions on LEED credits and on budget, schedule, and other project requirements.
9. Review construction documents to analyze discrepancies with LEED requirements.
10. Verify that products, technologies, and project plans have required sustainability components and are being properly implemented.
11. Specify the roles and responsibilities of project stakeholders in achieving a green project.
12. Justify why timely and accurate tracking and verification of project documentation are critical to the project's success in LEED certification.

Performance Tasks

This is a knowledge-based module; there are no performance tasks.

Materials and Equipment

Markers/chalk
Pencils and scratch paper
Whiteboard/chalkboard
Sustainable Construction Supervisor
PowerPoint® Presentation Slides
(ISBN 978-0-13-257315-3)
Multimedia projector and screen
Computer
LEED checklists
Labels that identify recycled content
Products that bear the FSC label or stamp

Examples of products bearing common green rating/labeling logos, including the following:
GreenSeal
Scientific Certification Systems (SCS)
Energy Star
WaterSense
Green Label Plus
GREENGUARD
National Sanitation Foundation (NSF)
Labels that make sustainability claims without proof

continued

Examples of product information
Product labels showing recycled content
Construction documents with commissioning requirements

Quick Quizzes*
Module Examinations**

* Located at the back of this module.

**Single-module AIG purchases include the printed exam and performance task sheet. If you have purchased the perfect-bound version of this title, download these materials from the IRC using your access code.

Additional Resources

This module is intended to present thorough resources for task training. The following reference works are suggested for both instructors and motivated trainees interested in further study. These are optional materials for continued education rather than for task training.

- California Stormwater Best Management Practices Construction Handbook/Portal*. California Stormwater Quality Association, 2009. Available at: www.casqa.org.
- Contractors Guide: Save Money and Resources Through Job-Site Recycling and Waste Prevention*. Seattle/King County, WA, 2002. Available at: <http://your.kingcounty.gov>.
- Environmental Resource Guide*. American Institute of Architects (AIA). New York, NY: John Wiley & Sons, 1996.
- Field Guide for Sustainable Construction*. Department of Defense – Pentagon Renovation and Construction Office, 2004. PDF, 2.6 MB, 312 pgs. Available for download at <http://renovation.pentagon.mil>.
- Green Building Handbook: A Guide to Building Products and Their Impact on the Environment*. Tom Woolley, Sam Kimmins, Paul Harrison, and Rob Harrison. London, UK: E & FN Spon, 1997.
- Green Building Materials: A Guide to Product Selection and Specification*. 2nd ed. Ross Spiegel and Dru Meadows. New York, NY: John Wiley & Sons, Inc., 2006.
- Green Building Product Certification & Labeling Systems*. Green Building Alliance, 2009. Available at: www.pa-greenbuildingproducts.org.
- Green Construction: Introducing Green Buildings & LEED to Contractors*. BuildSmart – Greater Vancouver Regional District, 2004. Contains examples of completed LEED worksheets for construction-related credits. Available at: www.infrastructure.alberta.ca.
- Greening Federal Facilities*, 2nd ed. U.S. Department of Energy Federal Energy Management Program, 2001. PDF, 2.1 MB, 211 pgs. Available for download at www.ofee.gov.
- GreenSpec Directory: Product Directory with Guideline Specifications*. 4th ed. Larry Strain. Alex Wilson & Nadav Malin (eds.). Battleboro, VT: BuildingGreen, Inc., 2003.
- Handbook of Sustainable Building: An Environmental Preference Method for Selection of Materials for Use in Construction and Refurbishment*. D. Anink, C. Boonstra, and J. Mak. London, UK: James & James Ltd., 1996.
- IAQ Guidelines for Occupied Buildings under Construction*. 2nd ed. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA), 2007. Available at: www.smacna.org.
- Innovation in Design Credit Catalog*. Washington, D.C.: U.S. Green Building Council, 2009. Available at: www.usgbc.org.
- King County Green Tools: Construction & Demolition Recycling*. King County, WA, 2010. Available at: <http://your.kingcounty.gov>.
- LEED Reference Guide for Green Building Design and Construction*. Washington, D.C.: U.S. Green Building Council, 2009. Available at: www.usgbc.org.
- Natural Capitalism*. Lovins, A., Hawkin, P., and Lovins, L.H. Boston, MA: Little, Brown, & Company, 1995. Available online at www.natcap.org.
- Sustainable Buildings Technical Manual*. Public Technologies, Inc./U.S. Department of Energy, 2006. PDF, 3.1 MB, 292 pgs. Available for download at www.smartcommunities.ncat.org.
- Sustainable Landscape Construction: A Guide to Green Building Outdoors*. 2nd ed. J. William Thompson and Kim Sorvig. Washington, D.C.: Island Press, 2007.
- The Green Guide to Specification*. Jane Anderson, David Shiers, and Kristian Steele. Watford, Hertfordshire, UK: BRE Press, 2009.
- The Seven Sins of Greenwashing: Environmental Claims in Consumer Markets*. TerraChoice Environmental Marketing, Inc., 2009. Available at: <http://sinsofgreenwashing.org>.

Teaching Time for This Module

An outline for use in developing your lesson plan is presented below. Note that each Roman numeral in the outline equates to one session of instruction. Each session has a suggested time period of 2½ hours. This includes 10 minutes at the beginning of each session for administrative tasks and one 10-minute break during the session. Approximately 20 hours are suggested to cover *Sustainable Construction Supervisor*. You will need to adjust the time required for hands-on activity and testing based on your class size and resources.

Topic	Planned Time
Session I. Introduction; Sustainability and the Built Environment	
A. Introduction	
B. Impacts of Land Development and Disturbance	_____
C. Impacts of Construction Materials	_____
D. Impacts of Equipment Use and Construction Processes	_____
E. Social Impacts of Construction	_____
Session II. Project Sustainability Goals: From Principles to Practice	
A. Balancing Impacts and Benefits of Construction	_____
B. Managing Impacts through Measurement	_____
C. LEED and the Construction Phase of Project Delivery	_____
D. Managing Sustainability Trade-Offs during Project Implementation	_____
Sessions III and IV. Green Building Materials and Technologies	
A. The Role of Materials and Technologies in Project Sustainability	_____
B. Green Product Rating and Labeling Systems	_____
C. Sources of Product Information	_____
D. Calculating and Documenting Materials-Related LEED Credits	_____
E. Evaluating and Documenting Product Substitutions	_____
Sessions V and VI. Green Building Methods and Processes	
A. The Role of Construction Processes in Project Sustainability	_____
B. Sustainable Construction Operations	_____
C. Materials Management	_____
D. Waste Management	_____
E. Indoor Air Quality Management	_____
F. Commissioning	_____
G. Calculating and Documenting Process-Related LEED Credits	_____
H. Evaluating and Documenting Process Substitutions	_____
Session VII. High Performance Green Project Teams	
A. Implementing a Green Project: Roles and Responsibilities	_____
B. Communicating the Costs and Benefits of Sustainability	_____
C. Identifying and Overcoming Barriers to Sustainable Practices	_____
D. Contributing to the Green Project Team	_____
E. Identifying Opportunities for Field Innovations	_____
Session VIII. Review and Testing	
A. Module Review	_____
B. Module Examination	_____
1. Trainees must score 70 percent or higher to receive recognition from NCCER.	
2. Record the testing results on Training Report Form 200, and submit the results to the Training Program Sponsor.	