

Lesson Plans for Module 70101-15

YOUR ROLE IN THE GREEN ENVIRONMENT

Module 70101-15 covers the impacts of the built environment on the green environment. It introduces methods to reduce negative environment impacts and explains how to apply the principles of a green building rating system.

Objectives

Learning Objective 1

- Select actions to improve your personal environmental impact at home and work.
 - a. Describe the major challenges buildings cause directly or indirectly on the green environment.
 - b. Identify choices in your personal and work life that impact the green environment.
 - c. Prioritize your actions in terms of which ones matter most for the green environment.

Learning Objective 2

- Identify technologies and practices that reduce environmental impacts of a project over its life cycle.
 - a. Describe the life cycle phases of a building and its impacts on the green environment.
 - b. Identify green site and landscape best practices and describe their pros and cons.
 - c. Identify green water and wastewater best practices and describe their pros and cons.

Learning Objective 2 (continued)

- d. Identify green energy best practices and describe their pros and cons.
- e. Identify green materials and waste best practices and describe their pros and cons.
- f. Identify green indoor environment best practices and describe their pros and cons.
- g. Identify green integrated strategies and describe the pros and cons of those alternatives.

Learning Objective 3

- Explain how craft workers can influence and contribute to a project's Leadership in Energy and Environmental Design (LEED) certification.
 - a. Describe the LEED rating process.
 - b. Identify construction activities and project features that affect a project's LEED rating.
 - c. List kinds of information collected during construction to support LEED documentation.
 - d. Identify common construction pitfalls that affect a project's LEED rating.

Performance Tasks

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

Teaching Time: 15 hours

(Six 2.5 hour sessions)

Session time may be adjusted to accommodate your class size, schedule, and teaching style.

Prerequisites

None.

Before You Begin

As you prepare for each session, allow sufficient time to review the course objectives, content, visual aids (including the PowerPoint presentation), and these lesson plans, and to gather the required equipment and materials. Consider time required for demonstrations, laboratories, field trips, and testing.

Using your access code, download the written examinations and performance profile sheets from www.nccerirc.com. The passing score for submission into NCCER's Registry is 70% or above for the written examination.



Classroom Equipment and Materials

Whiteboard/chalkboard

Markers/chalk

Pencils and scratch paper

Your Role in the Green Environment

PowerPoint® Presentation Slides

DVD player or a computer with a DVD drive

LCD projector and screen

Computer with Internet access

Copies of the Module Examination

Additional Resources

This module presents thorough resources for task training. The following resource material is suggested for further study:

Field Guide for Sustainable Construction. Department of Defense – Pentagon Renovation and Construction Office. (2004). PDF, 2.6 MB, 312 pgs. Available for download at www.wbdg.org.

Greening Federal Facilities, 2nd Ed. US Department of Energy Federal Energy Management Program. (2001). PDF, 2.1 MB, 211 pgs. Available for download at www.wbdg.org.

Natural Capitalism. Lovins, A., Hawkin, P., and Lovins, L.H. (1995). Little, Brown, & Company, Boston, MA. Available online at www.natcap.org.

Sustainable Buildings Technical Manual. Public Technologies, Inc./US Department of Energy. (2006). PDF, 3.1 MB, 292 pgs. Available for download at www.greenbiz.com.

Sustainable Buildings and Infrastructure: Paths to the Future. Pearce, A.R., Ahn, Y.H., and Hanmi Global. (2012). Routledge, London, UK.

Sustainable Construction: Green Building Design and Delivery, 3rd Ed. Kibert, C.J. (2012). Wiley, New York, NY.

The HOK Guidebook to Sustainable Design, 3rd Ed. Odell, W. and Lazarus, M.A. (2015). Wiley, New York, NY.

There are a number of online resources available for trainees who would like more information on green practices in construction. A search for additional information may be assigned as homework to interested trainees. The following list is a compilation of web sites referenced in this module.

American Society of Heating, Refrigerating, and Air-Conditioning Engineers: www.ashrae.org

Arid Solutions Inc.: www.aridsolutionsinc.com

Carbon Footprint: www.carbonfootprint.com

Database of State Incentives for Renewables & Efficiency: www.dsireusa.org

Energy Star: www.energystar.gov

Forest Stewardship Council: www.fsc.org

Green Building Certification Institute: www.gbci.org

Green Building Initiative: www.thegbi.org

Green Globes: www.greenglobes.com

Green Seal: www.greenseal.org

Green-e: www.green-e.org

Habitat for Humanity: www.habitat.org

International Initiative for a Sustainable Built Environment: www.iisbe.org

Living Building Challenge: www.living-future.org/lbc

NAHB Research Center: www.nahbrc.org

Natural Capitalism: www.natcap.org

Office of the Federal Environmental Executive: www.ofee.gov

Refining Process: www.myfootprint.org

Sheet Metal and Air Conditioning Contractors' National Association: www.smacna.org

Smart Communities Network: www.smartcommunities.ncat.org

The Carpet and Rug Institute: www.carpet-rug.org

The PLANTS Database: www.plants.usda.gov

Unit Conversion: www.convertunits.com

US Environmental Protection Agency: Clean Energy www.epa.gov/cleanenergy

US Green Building Council: www.usgbc.org

WaterSense: www.epa.gov/watersense

Whole Building Design Guide: www.wbdg.org

YOUR ROLE IN THE GREEN ENVIRONMENT

The Lesson Plan for this module is divided into six 2.5-hour sessions. This time includes 10 minutes for administrative tasks and a 10-minute break per session.

SESSION ONE

Session One introduces students to actions that they can take to improve their personal environmental impact at home and work.

1. Show Session One PowerPoint® presentation slides.
2. Provide an overview of the major environmental challenges caused by buildings.
3. Select actions to improve personal environmental impact at home and work.
4. Emphasize the need to prioritize actions in terms of which ones matter most for the green environment.
5. Complete Section 1.0.0 Review Questions.

SESSION TWO

Session Two introduces the students to the life cycle phases of buildings and the best practices associated with green site and landscape best practices.

1. Show Session Two PowerPoint® presentation slides.
2. Introduce facility life cycle and complete an inventory of the classroom building.
3. Describe site and landscape best practices and improvement opportunities.

SESSION THREE

Session Three introduces students to green water, wastewater, energy, materials and waste best practices.

1. Show Session Three PowerPoint® presentation slides.
2. Describe water and wastewater best practices.
3. Explain energy best practices.
4. Describe materials and waste best practices.

SESSION FOUR

Session Four introduces students to the best practices for green indoor environmental quality and integrated solutions strategies.

1. Show Session Four PowerPoint® presentation slides.
2. Identify green indoor environment best practices and complete the improvement opportunity activity.
3. Identify green integrated strategies and perform the revised inventory and prioritization activity.
4. Complete Section 2.0.0 Review Questions.

YOUR ROLE IN THE GREEN ENVIRONMENT

SESSION FIVE

Session Five introduces students to the LEED rating process and the construction activities and project features that affect a project's LEED rating.

1. Show Session Five PowerPoint® presentation slides.
2. Describe the LEED rating process.
3. Identify construction activities and project features that affect a project's LEED rating.
4. Complete the LEED green building rating system (checklist demonstration using the classroom building).
5. Describe the goals of the LEED rating system.
6. Complete Section 3.0.0 Review Questions.

SESSION SIX

Session Six introduces students to the documentation that is required for LEED certification and the common construction pitfalls encountered.

1. Show Session Six PowerPoint® presentation slides.
2. List kinds of information collected during construction to support LEED documentation.
3. Identify common construction pitfalls that affect a project's LEED rating.
4. Have trainees complete the Module Review Questions. Answer any questions that the students may have.
5. Have the students complete the Module Examination.
6. Record the testing results on the Registration of Training Modules Form, and submit the report to your Training Program Sponsor.

Materials Checklist for Module 70101-15, Your Role in the Green Environment

Equipment and Materials					
Personal protective equipment:		None			
None					
Whiteboard/chalkboard					
Markers/chalk					
Pencils and paper					
<i>Your Role in the Green Environment</i> PowerPoint® Presentation Slides					
DVD player					
Computer with internet access					
Copies of the Module Examination					
LCD projector and screen					

To the extent possible, and as required for performance testing, provide a selection of the tools listed for each session; alternatively, photos may be used to teach tool identification.