Weatherization and Renewable Energy

Course # AIABLTI303

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request. This course is registered with AIA CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA or any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

Course Description

Building homes that are well protected from the weather should be a priority for any building professional. The majority of problems stem from improper procedures and workmanship, but often the problem is found in the design of a home. This course will explore factors that contribute to exterior shell failure, and identify practical solutions that will preserve the integrity of the building envelope.

As technological innovation creates new construction possibilities, incorporating energy-efficiency into building projects can not only provide a better quality of life, but also protect the environment. A comprehensive approach to resource and energy efficiency is the best method to achieve a resource and energy efficient building.

After completing this course participants will be able to:

- Identify the components of the building as a system, its performance requirements, and how these features must be integrated to prevent building envelope failure.
- Describe how a properly constructed building envelope will keep out weather related moisture and stop uncontrolled movement of energy due to loss of conditioned air.
- Identify innovative design considerations incorporating energy efficient resources and components.
- Evaluate the structural considerations when installing/mounting these new systems.

COURSE SYLLABUS

Course Description

This six hour course fulfills the continuing education requirements as outlined by the Massachusetts Board of Building Regulations and Standards CSL Continuing Education Requirement as well as 6 hours of HSW for AIA members. This course is delivered in a video/text format.

Weatherization: Students successfully completing this three hour portion will gain confidence in their ability to reduce building envelope failure using proven methods of construction. Building homes that are well protected from the weather is important for all building professionals. The majority of problems stem from improper procedures and workmanship. Sometimes a problem is found in the design of a home, adding to disputes over poor workmanship. The very best defense against moisture issues in a home is in training the workforce in how moisture enters into the internal structural areas of a home and what procedures to use in the many tasks involved to head off these problems.

Renewable Energy: Renewable energy is contributing more and more to the world's ever-rising energy demands. Wind and solar energy generation systems are about to reach the level of affordability that will allow them to be considered equal to conventional power generation systems like fossil fuel plants and hydro-electric dams. Contractors should know what products are on the market, what rebates and incentives are available for their customers who want to take advantage of energy efficient resources and components.

Weatherization I

****Learning Objectives:*** 1) Understand cause and effect of weatherization problems within the construction industry. 2) Understand contractor responsibilities, what to avoid and what to embrace. 3) Recognize the cause of most below-grade moisture issues and the remedies that should be taken.

Why is There a Problem?

1. Rationale
2. Primary Warranty and Insurance Claims
3. Solutions
4. Experience
5. Contractor Responsibilities
6. Insurance Availability and Affordability

The Building Envelope System

1. Building Envelope System
2. Performance Objectives
3. Physical Components
4. Sources of Moisture Intrusion
5. Results of Failure

Foundation Construction

1. Thermal and Moisture Protection
2. Groundwater
3. Gutters
4. Crawl spaces
5. Damp proofing and Waterproofing
6. Girders and Beams

Assessment

Weatherization II

Learning Objectives: 1) Recognize the causes of high humidity in homes and how housewraps and flashings work. 2) Describe some of the steps and terminology for installing flashings and code minimums. 3) Know how to prepare window and door openings for proper installation.

Wall Construction

1. Wall Framing
2. Vapor Diffusion Problems
3. Recommendations
4. House Wrap and Underlayment
5. Window and Door Openings
6. Flashing and Caulking
7. Siding

Roof Construction

1. Skylights
2. Moisture Penetration

3. Roof Valleys
4. Shingles and Shakes
5. Roof Sheathing
6. Repairs
7. Flashing

Window and Door Installation

1. Windows, Doors and Skylights
2. Proper Flashing
3. Door and Window Installation

Assessment

Weatherization III

Learning Objectives: 1) Recognize the purpose of ventilation and ventilation requirements.
2) Understand how a capillary break works with other components to prevent moisture intrusion.
3) Be aware of consumer remedies and contractor responsibilities.

Ventilation System Installation and Requirements

1. Code
2. Attic Ventilation
3. Heating, Ventilation and Air Conditioning

Building Envelope Best Practices

1. Moisture Retarding Construction
2. Capillary Breaks
3. House Wrap Installation
4. Window and Door Installation
5. Siding Installation
6. Roofing Best Practices

Consumer Remedies

1. Common Mistakes
2. Preventative Measures
3. Warranties
4. Complaints
5. Arbitration and Dispute Resolution

Assessment

Wind Power I

Learning Objectives: 1) Be able to describe the history of harnessing the wind's energy. 2) Identify the difference between wind energy and conventional energy production. 3) Appreciate some of the "Pro vs. Con" debates regarding Green Renewable Wind generated energy.

1. History
2. Products and Components
3. Sources of Energy Production
4. Offshore Production: Pros and Cons
5. Onshore Production: Pros and Cons

Assessment

Wind Power II

Learning Objectives: 1) Understand what "distributed" wind power really means to home owners, communities and industry. 2) Appreciate some of the solutions addressing concerns over the harvesting of wind energy. 3) Recognize the concerns of the home owner or small business owner when deciding on whether or not to pursue wind energy.

1. Distributed wind power
2. Automation and Safety Factors
3. Grants and Incentives
4. Residential and Small Business Wind Generation

Assessment

Solar Energy Use I

Learning Objectives: 1) Understand the difference between "passive" and "active" solar energy use. 2) Know what PV stands for, and how PV solar energy collection varies from traditional solar heat collection. 3) Gain an awareness of the benefits of solar energy: for residential and commercial use as well as how solar energy benefits the environment.

1. Solar Energy: Passive/Active
2. Solar Photo Voltaic
3. Industry Acronyms and Terms
4. Residential and Small Business Solar Use
5. Rebates and Incentives

Assessment

Solar Energy Use II

Learning Objectives: 1) Understand some small business or home owner advantages. 2) Realize there is a price to pay for clean, green energy. 3) Recognize pros and cons when considering solar.

1. Small Business Systems
2. Residential Use
3. Solar Pros and Cons
4. Structural Considerations
5. Installation and Mounting Considerations

Assessment

Solar Energy Use III

Learning Objectives: 1) Be aware of the history of man harnessing the sun's energy. 2) Know the amount of solar energy versus conventional fuel produced energy in the United States. 3) Learn some new terms and gain an appreciation for what "green energy" really means.

1. Solar Harvesting
2. Solar Power Plants
3. Industry Acronyms and Terms

Assessment

Course instructors will be available by email or telephone between 9am and 5pm Eastern Standard Time. They will assist you with questions regarding course content.

If you have any questions, please call us at 1-800-727-7104 or send an email to info@licensetobuild.com. Email responses will usually be returned promptly, but guaranteed within one business day.

Student policies and procedures are always available by going to www.licensetobuild.com and scrolling to the bottom of the page (See Privacy and Refund Policy).

Click Here to return to AIA course page