

Weatherization Technician/Installer Syllabus

Time: 40 hours

Maximum Class Size: 12

Prerequisites: Green Construction Awareness

Course Description: This course is designed to introduce the participant to the basic weatherization skills needed to be successful as a Weatherization Technician/Installer. They will be introduced to the concept of Building Science and the “Whole House Approach” which emphasizes the interaction between interdependent factors such as climate, the building envelope, lighting, appliances, insulation, and hot water systems to improve energy efficiency. The participant will study Energy and Energy Conservation Principles, the Building Envelope concept and Ventilation. They will learn how to seal leak areas and apply weatherization materials. Ductwork leak testing, seal, insulation and repair are also addressed. Extensive hands-on training is provided in donning the appropriate PPE and installing fiberglass, cellulose, and foam insulation. Other concepts addressed are insulating a hot water heater and installing low-flow showerheads and faucet aerators. This course will give the participant a thorough understanding of basic weatherization concepts as well as hands-on training in many weatherization techniques.

Goals/Objectives/Student Learning Outcomes:

- Describe what is meant by the “Whole House” approach to weatherization.
- Describe how energy systems work, individually and in concert, including:
 - Hot water systems
 - Ventilation systems
 - Air conditioning systems
 - Heating systems
- Describe lighting, including incandescent, CFL and LED
- Describe how energy and energy conservation principals work including:
 - Law of conservation
 - Principals of air Leakage
 - Duct leakage
 - Effects of weatherization methods on the home
 - Building heat loss characteristics
 - Reducing energy use
- Describe the Thermal Envelope.
- Describe the Pressure Envelope.
- Describe insulation materials.
- Describe R values.
- Describe U values.

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- Identify and demonstrate the proper use of the PPE necessary when insulating a building.
- Safely install insulation in the following areas:
 - Attic (flat) floor
 - Walls
 - Ceilings
 - Basement
 - Hybrid spaces (i.e. knee walls)
- Safely install the most common types of insulation, including.
 - Rolled/batt fiberglass
 - Cellulose: loose and dense pack
- Safely insulate specialty areas, including recessed lights (includes replacing lights), know and tube wiring and water heaters.
- Insulate a building using blown-in insulation.
- Describe materials used in new home construction that help seal a home.
- Describe the importance of proper ventilation in a home.
- Locate leak areas in a building.
- Use products to seal leaks, such as:
 - Spray foam
 - Caulking
 - Weather-stripping
 - Wood filler
- Seal leak areas
- Weatherize windows
- Weatherize doors
- Describe various types of ductwork and the uses for each.
- Explain a home's air conditioning/heating air movement (i.e. supply and return) and how improvements can be made to older and or retrofitted homes.
- Seal ductwork to improve a home's energy efficiency.
- Perform ductwork repairs
- Insulate ductwork
- Insulate and seal around opening created by ductwork.

Standards

- The California Green Building Standard Codes: California Code of Regulations Sections 505 (building envelope), 506 (air sealing), 508 (water heater installation), 608 (water efficiency and conservation)
- Career Technical Education Framework for California: Building Trades and Construction Industry Sector 3.1 (Career Planning and Management), 9.3 (Leadership and Teamwork), 11.0 (Demonstration and Application) and BTC D1.0-3.0 & 5.0 (Pathway Standards).

Classroom Rules and Procedures:

- All classes begin at 6:30 am and end at 3:00 pm

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- Upon entering classroom, all participants must sign in and be seated by 6:30 am
- Class will consist of a combination of lecture, video, demonstration, coached group exercises, individual exercises and assessment.
- Students are required to report to class ready to work and maintain the provided PPE

Textbooks/Readings/Materials:

- *Weatherization Technician/Installer*-LIUNA Training (Instructor & Participant Guides)
- Weatherization PowerPoint (Building Science, Insulation & Sealing)
- Hand-out Packet (from LIUNA Weatherization Technician/Installer Instructor Materials)
- *Weatherization Technician/Installer* 25-question Exit Exam

Tools/Equipment/Other Materials:

- Hammers
- lineman pliers
- 25 ft. measuring tape
- utility knives
- Chisels
- insulation materials
- caulking materials

Personal Protective Equipment:

- 12 pairs of gloves
- 12 pairs of safety glasses
- 20 pairs of earplugs
- 12 hard hats
- 12 Respirators
- 12 Tyvek suits

Course Requirements:

To receive credit for the course, participants must:

- Be present for full forty hours
- Participate in all classroom exercises
- Pass a written exam

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Course Policies:

- Participants must be on-time and ready to work.
- Participants must return from breaks on-time.
- Participants must participate in each exercise and assignment
- Participants who are on “light duty” are not allowed to take this course due to the physically demanding requirements.

Assessment and Grading:

Participants will be assessed on the following:

- All written exams must be passed with a score of 80% or above.
- All hands-on exercises are graded on performance and participation. They are pass/fail and must be passed with a score of 80% or above.

Safety:

Failure to maintain and use PPE may result in dismissal from the course.