



Veterans Training and Employment Program

BPI ANALYST & ENVELOPE PROFESSIONAL

COURSE DESCRIPTION

This Building Performance Institute (BPI) Certification course will develop your knowledge and expertise within specialized fields of the residential energy efficiency audit workforce. Through a combination of classroom and field training, you will learn how to diagnose critical performance factors in a home that impact comfort, health, safety, durability and energy efficiency.

LOCATION

VETS Group Training Center
1200 18th St. NW, Suite LL100
Washington DC, 20036

SCHEDULE

M, T, W, TH 8:00am-2:00pm

LENGTH

2 Weeks (48 hrs)

FEES

TUITION: \$1749.00,
*includes exam vouchers (valued at \$500.00)

MATERIALS: \$75.00

Residential Energy: Cost Savings and Comfort for Existing Buildings, (Paperback), John T Krigger and Chris Dorsi

EXAMS: \$500.00

COURSE OUTLINE

1200 18th St. NW, Ste LL-100
Washington DC, 20036
202-822-0011

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MODULE 1: GREEN Principles of Building Science

This module was developed and written in partnership with nationally recognized building science experts from Advanced Energy of North Carolina and is full of scientific facts, interactive exercises, pictures, videos, make buildings perform more efficiently. The PBS has also been designed to help prepare individuals on the path to various NATE, NARI, BPI, RESNET, and other industry credentials related to green building performance. Instruction aligns with ANSI/ACCA Quality Installation & Maintenance Standards.

TOPICS COVERED

- House as a System
- Air Flow Basics
- Heat Flow, Insulation & Windows
- Framing & Air Sealing
- Moisture Management
- Conditioning Strategies
- Ventilation
- Combustion Safety
- Indoor Air Quality Basics

This section includes a comprehensive exam of the material covered. Must obtain a 75% or higher to obtain CEH recognition.

MODULE 2: HVACR Systems Air Properties and Measurement

This module is the introduction to HVAC comfort systems. In this portion of the course we will discuss heat energy, the conditions of human comfort, the psychometric chart and plotting various air conditions upon it. We will complete the section by introducing the terms, concepts, measurements, and calculations of moving air. Instruction aligns with ANSI/ACCA Quality Installation & Maintenance Standards.

TOPICS COVERED

- Heat Energy and Comfort
- Properties of Air
- Psychometrics
- Total Heat In Air
- Measuring a Heavy Invisible Moving Volume
- Air Flow Measurement

MODULE 3: HVACR Systems II, Load Calculations

This module introduces you to residential load calculations. This is a method to determine the heating and cooling Btu/h loads of structures prior to installing HVAC/R systems to meet those loads. The required text is the Air Conditioning Contractors of America (ACCA) Manual J, 8th Abridged Edition (MJ8-AE). The manual

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provides thorough instructions for estimating heat loss and heat gain for residential structures and helps to simplify complicated procedures that are often used on a variety of home applications. This portion of the course will provide instruction for completing load calculations by hand, which is necessary prior to attempting any computerized load program. We will focus on following the concepts of MJ8-AE while simplifying the methodology emphasized in the manual even further. You will utilize a "simple" residential structure and follow the steps to calculate both heat loss and heat gain for its location and outdoor design temperatures. This section also covers residential equipment selection focused on the heating and cooling equipment Btu/h loads of a structure.

TOPICS COVERED

- Fundamentals of Load Calculations
- Heat Loss of a Structure
- Heat Gain of a Structure
- Example Heat Loss and Heat Gain Calculation
- Fundamentals of Equipment Selection
- Regional Load Calculation Exercises

MODULE 4: Performing the Comprehensive Building Assessment

Designed to introduce you to the comprehensive building assessment process, this intermediate portion of the course is geared toward conducting visual building inspections, performing diagnostic testing, and determining residential building improvement opportunities in the field; then documenting a home's performance, prioritizing improvements, and preparing a work scope that will guide the homeowners decision making process for making the improvements. You will start out learning the systems, tools and techniques commonly encountered during visual observations including evaluation of envelope components, mechanical systems and base loads such as appliances and lighting. You will then step into diagnostic testing learning first how to work safely. You will learn how to set up and use the blower door for building pressurization/depressurization testing; and how to utilize the data obtained in making decisions. You will learn combustion safety testing (including worst case depressurization, draft and spillage testing), and how to test various appliances for CO including: furnaces, boilers, water heaters and other combustion appliances. Students will also learn basic duct diagnostic testing. Finally, you will be taught how to use assessment information and diagnostic results to develop a work scope which can then be presented to a customer. This section will refer to the BPI Building Analyst as well as to various industry codes and standards. It helps prepare individuals for BPI Building Analyst Certification and NATE HVAC Efficiency Analyst Certification (Senior Level). Instruction aligns with ANSI/ACCA Quality Installation & Maintenance Standards.

CEH/CEU's earned are applicable to recertification. You must obtain a 75% or higher to obtain CEH/CEU recognition. Recommended Prerequisites: Students should have taken the Principles of Building Science or a similar course, or have a solid understanding of building science concepts and house-as-a-system prior to enrollment.

TOPICS COVERED

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- Observation Techniques and Data Collection
- Exterior & Interior Assessment and Building System Analysis
- Blower Door and Zonal Pressure Diagnostics, Ventilation Rates
- Combustion Safety Testing and Analysis
- Duct Diagnostics
- Work Scope Development and Customer Relations

EXAMS

THE PROCESS

For each Building Performance Institute (BPI) certification there are two unique tests, one Written Test and one Field Test. Candidates are allowed two hours to complete each test. The written test is scheduled on the last formal day of class and is usually taken at the same time with all students. For the Field Test, students sign up for test time slots per their own schedules and that of the proctor.

WRITTEN TEST

The Written Test is administered in class to be completed online and contains 100 multiple choice questions. Aside from a 17 page standards guide published by BPI and a traditional calculator, the test is closed book. Candidates have 2 hours to complete the test and scratch paper will be collected at the end. The results of the test are available exclusively to each candidate immediately upon completion and a detailed specific scoring statement will follow by mail.

FIELD TEST

The Field Test for each candidate is one-on-one with the proctor. At a qualifying test home/building, the candidate must physically and verbally demonstrate their capability to use specific tools of the trade and through that use and their spoken discussion, demonstrate competency in doing specific building performance measurement tasks. The candidate may use any tool, book or outline with them for reference. Candidates have 2 hours to complete this exercise.

SCORING

Both the BPI Written and Field Tests are scored with a strong weight on health and safety issues including the techniques that ensure homes/buildings are operating safely and will continue to operate safely after performance work has been completed. Test results are received from BPI usually within 5-10 days (sometimes longer depending on testing loads) via an email invitation to the candidate to view their results privately on the BPI Website.