



OFFICE FOR ASSESSMENT OF PROFESSIONAL AND
WORKPLACE LEARNING

ACADEMIC PROGRAM REVIEW
of

BUILDING PERFORMANCE INSTITUTE (BPI)
CERTIFICATIONS

REVIEW DATES:
FEBRUARY 11 & 14, 2013

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The Building Performance Institute (BPI)

Founded in 1993, BPI certifies residential energy auditors. BPI focuses on knowledge and skills needed by auditors, technicians and other workers to improve the performance of residential homes. BPI teaches “the house as a system” by emphasizing the inter-relatedness of building systems as they relate to consumption. The Institute develops standards for energy efficiency retrofit work to be able to identify energy efficiency problems, perform comprehensive standardized energy evaluations, and perform retrofits to remedy the problems. They have developed professional credentials for individuals as well as accreditations for contracting companies. The certifications are based on testing protocols set by the American National Standards Institute. BPI works with the US Department of Energy to help create standards for residential energy efficiency that are used nationally.

Source of Official Student Records: *TBD*

For further information about the review, contact: Office for Assessment of Professional and Workplace Learning, Thomas Edison State College, 101 West State Street; Trenton, New Jersey 08608-1176, (609) 633-6271; apr@tesc.edu.

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BUILDING PERFORMANCE INSTITUTE (BPI)
CERTIFICATIONS

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INDEX OF CERTIFICATIONS/CREDIT RECOMMENDATIONS

Page #	Certification Title	Effective Dates	Credit Recommendation/Award	
			Cr/Level	Subject Area
6.	Air Conditioning and Heat Pump Professional	January 2003 – February 2018	3 UD	Sustainable Energy, or Sustainable Management, or Green Building
7.	Building Analyst Professional	January 2003 – February 2018	3 LD	Sustainable Energy, or Sustainable Management, or Green Building
9.	Envelope Professional	January 2003 – February 2018	3 LD	Sustainable Energy, or Sustainable Management, or Green Building
10.	Heating Professional	January 2003 – February 2018	3 UD	Sustainable Energy, or Sustainable Management, or Green Building
11.	Manufactured Housing Professional	January 2003 – February 2018	3 UD	Sustainable Energy, or Sustainable Management, or Green Building
12.	Multi Family Building Analyst Professional	January 2004 – February 2018	4 UD	Sustainable Energy, or Sustainable Management, or Green Building
14.	Multi Family Energy Efficient Building Operator	January 2004 – February 2018	3 LD	Sustainable Energy, or Sustainable Management, or Green Building
15.	Residential Building Envelope Whole House Air Leakage Control Installer (RBE-WHALCI)	January 2008- February 2018	3 LD	Sustainable Energy, or Sustainable Management, or Green Building
Total Certifications Reviewed – 8				
Total Credits Recommended – 25				

Key: LD = Lower Division associate/baccalaureate level UD = Upper Division baccalaureate level

Certification Sheet

Name of Certification: Air Conditioning and Heat Pump Professional

Certification Description: This certification is intended for experienced heating contractor, and prepares participants to ensure cooling systems function properly.

Effective Date: January 2003 – February 2018

Learning Outcomes: Upon successful completion of this certification, the participant will be able to:

- Demonstrate knowledge required to understand the role of HVAC systems.
- Diagnose and remediate issues for maximum energy performance.
- Demonstrate knowledge of how airflow, electrical systems, and refrigerant charges affect cooling and heat pump systems.

Major Topics covered in this certification and exam:

- Register Airflow Testing
- System Airflow
- Refrigerant Charge Testing
- Combustion Safety Tests
- Dual System Inspection
- Infiltration Evaluation
- General Home Investigation
- Heat Loss/Load Calculation

Assessment criteria: The certification includes a 100 question written exam and a 2 hour field exam. Participants must achieve a 70% pass rate on the exam to qualify for certification.

Credit Recommendation: In the upper division baccalaureate degree category, 3 credits in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for the credit award, participants must have been current in the certification during the effective dates noted on this report.*

Credit Rationale: The certification assumes prerequisites such as completion of an EPA 608 Level II or Universal Certification and therefore assumes technical knowledge as well as mathematics learned at the lower level.

Certification Sheet

Name of Certification: Building Analyst Professional

Certification Description: This certification focuses on the fundamentals of home performance evaluation and whole-house retrofit planning and execution.

Effective Date: January 2003 – February 2018

Learning Outcomes: Upon successful completion of this certification, the participant will be able to:

- Demonstrate knowledge of the guidelines for airflow equations.
- Demonstrate an understanding of the standards for blower door testing, air sealing techniques.
- Demonstrate an understanding of the standards for ventilation and insulation.
- Demonstrate knowledge required to inform homeowners about energy options in their home.
- Demonstrate and diagnose areas of energy waste, health and safety or durability problems related to energy conservation.

Major Topics covered in this certification and exam:

- Principles of Energy and Building Science
- The Energy Audit Process
- Building Shell and Thermal Envelope
- Airflow Basics
- Moisture Management
- Air Quality
- Combustion Safety and CO Monitoring
- Building Systems: HVAC, Lighting, Appliances, and DHW
- Diagnosing Common Building Problems
- Blower Door Testing
- Combustion Testing and Safety
- HERS Rating
- Computer Modeling

Assessment criteria: Written exam and field test. Participants must achieve a 70% pass rate on the exam to qualify for certification.

Credit Recommendation: In the lower division associate/baccalaureate degree category, 3 credits in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for the credit award, participants must have been current in the certification during the effective dates noted on this report.*

Credit Rationale: The certification tests the practical and theoretical knowledge necessary to perform a basic energy evaluation in a single family home. As such, it requires a college level understanding of algebra and communication as well as the basic components of homes and buildings.

Certification Sheet

Name of Certification: Envelope Professional

Certification Description: This certification focuses on the whole-house performance based approach. It quantifies performance and prescribes improvements to help tighten the building envelope, stop uncontrolled air leakage as well as optimize comfort, durability and HV/AC performance.

Effective Date: January 2003 – February 2018

Learning Outcomes: Upon successful completion of this accreditation, the participant will be able to:

- Demonstrate knowledge required to conduct a blower door test.
- Demonstrate knowledge of air sealing and duct sealing.
- Demonstrate knowledge of the whole house system concept.
- Conduct a home performance inspection and recommend appropriate repairs.

Major Topics covered in this certification and exam:

- Health and Safety
- Building Science
- Combustion Safety
- Energy Basics
- Moisture
- Mechanical ventilation
- Pressure diagnostics
- Distribution system
- Thermal and Pressure Boundaries
- Blueprint evaluation

Assessment criteria: Written exam and field test. Participants must achieve a 70% pass rate on the exam to qualify for certification.

Credit Recommendation: In the lower division associate/baccalaureate degree category, 3 credits at in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for the credit award, participants must have been current in the certification during the effective dates noted on this report.*

Credit Rationale: The practical knowledge required in this certification is appropriate to a lower division course. BPI Building Analyst training should be a pre-requisite to this course.

Certification Sheet

Name of Certification: Heating Professional

Certification Description: This certification covers advanced heating system diagnostics, evaluation and repair skills.

Effective Date: January 2003 – February 2018

Learning Outcomes: Upon successful completion of this credential, the participant will be able to:

- Demonstrate knowledge required to understand heating systems, including combustion and proper equipment set up.
- Demonstrate knowledge of venting and drafting of different types of appliances.
- Demonstrate knowledge of oil-fired space heating.
- Perform heating systems diagnostic and repairs.
- Demonstrate knowledge of industry standard design requirements regarding HVAC.

Major Topics covered in the certification and exam:

- Health and Safety
- Diagnostic Tests and Inspection
- Infiltration Evaluation
- Combustion Safety Tests
- CO testing
- Ducted System
- Hydronic Systems
- Heat Loss/Load Calculation
- Domestic Hot Water

Assessment criteria: Written exam and field test. Participants must achieve a 70% pass rate on the exam to qualify for certification.

Credit Recommendation: In the upper division baccalaureate degree category, 3 credits in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for the credit award, participants must have been current in the certification during the effective dates noted on this report.*

Credit Rationale: This certification assumes knowledge of the subject areas covered in the Building Analyst certification (or the equivalent)—advanced knowledge of heating systems, i.e., the student would be knowledgeable in the basic areas covered in the Building Analyst certification, such as principles of energy and building science, building systems, and air quality.

Certification Sheet

Name of Certification: Manufactured Housing Professional

Certification Description: This certification focuses on the energy auditing requirements for manufactured housing.

Effective Date: January 2003 – February 2018

Learning Outcomes: Upon successful completion of this credential, the participant will be able to:

- Analyze energy efficient plumbing.
- Demonstrate knowledge of insulation standards.
- Demonstrate an understanding of energy efficient mechanical systems.
- Inspect the energy efficiency of the building including insulation, mechanical systems, and plumbing.

Major topics covered in this certification and exam:

- Electrical Safety
- Duct Systems
- Interior Insulation
- Wall insulation
- Roof Insulation
- Mechanical Systems
- Windows and Doors
- Plumbing

Assessment criteria: Written exam and field test. Participants must achieve a 70% pass rate on the exam to qualify for certification.

Credit Recommendation: In the upper division baccalaureate degree category, 3 credits in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for the credit award, participants must have been current in the certification during the effective dates noted on this report.*

Credit Rationale: Because of the focus of this certification in manufactured housing, the certification assumes a broad range of building principles, mechanical systems as well as basic algebra and communication.

Certification Sheet

Name of Credential: Multi Family Building Analyst Professional

Certification Description: This certification focuses on the standards and practices for energy auditing large housing complexes with multiple family units.

Effective Date: January 2004 – February 2018

Learning Outcomes: Upon successful completion of this certification, the participant will be able to:

- Demonstrate that all building systems function properly together to maximize the performance, comfort, energy efficiency, safety and durability of multifamily buildings.
- Communicate and report a record of contacts, interview maintenance crews, and document proper disposal of hazardous materials.
- Analyze energy modeling.
- Demonstrate knowledge of sampling air quality, moisture and ventilation issues.
- Create a schedule of existing equipment.
- Demonstrate an understanding of energy efficient lighting and appliances.

Major topics covered in this certification and the exam:

- Benchmarking
- Heat Loss Calculations
- Analysis of Lighting
- Utility Rate Structure and Usage
- Inspection of Site
- Energy Modeling
- Mechanical Systems and Controls
- Inspection of Site/Multifamily Building
- Energy Management Controls

Assessment criteria: This certification includes a 100 question written exam together with a field test. Participants must achieve a 65% pass rate overall, with minimum of 60% in either the written or practical exam to qualify for the certification.

Credit Recommendation: In the upper division baccalaureate degree category, 4 credits in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for*

the credit award, participants must have been current in the certification during the effective dates noted on this report.

Credit Rationale: A BPI Building Analyst certification, as well as the Multi-Family Energy Efficient Building Operator (or evidence of the equivalent knowledge) is recommended before attempting this certification. This certification requires an ability to communicate and report information, perform an analysis, apply diagnostics as well as have knowledge of mechanical and electrical systems.

Certification Sheet

Name of Credential: Multi Family Energy Efficient Building Operator

Certification Description: This certification focuses on managing building performance for energy efficiency.

Effective Date: January 2004 – February 2018

Learning Outcomes: Upon successful completion of this certification, the participant will be able to:

- Develop and deploy a maintenance schedule and plan.
- Operate and monitor energy management system.
- Mitigate health and safety issues.
- Identify energy saving upgrades.

Major topics covered in this certification and exam:

- Building Systems
- Principles of Energy
- Insulation
- Lighting and Appliances
- Cooling
- Preventive maintenance
- Water conversion
- Heating system evaluation
- Indoor Environmental Quality
- Waste Management

Assessment Criteria: Examination (written and field). Participants must achieve a 65% pass rate overall, with minimum of 60% in either the written or practical exam to qualify for the certification.

Credit Recommendation: In the lower division associate/baccalaureate degree category, 3 credits in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for the credit award, participants must have been current in the certification during the effective dates noted on this report.*

Credit Rationale: This certification focuses on the practical ability to maximize energy efficiency in large buildings. The emphasis is on the fundamentals.

Certification Sheet

Name of Certification: Residential Building Envelope Whole House Air Leakage Control Installer (RBE-WHALCI)

Certification Description: This certification reflects the knowledge, skills and abilities' requirements for residential building envelope whole house air leakage control installers who are involved in the retrofit of existing residential buildings. The scope of the certification includes the installation of specific air leakage control measures in accessible and inaccessible unconditioned and semi-conditioned spaces of existing residential homes. These specific measures represent typical air leakage control applications and incorporate the principals of air leakage control, which then can be applied to most air leakage control locations.

The requirements for this certification will be reviewed every five years and modified as required by the Certification Scheme Committee with input from the residential retrofit industry. Modifications to the certification scheme will be made by BPI on the basis of the non-compliance cases, feedback from industry and technical changes to materials, components, systems, building codes or other relevant items. Knowledge of residential construction types as exhibited by blueprint reading is the recommended prerequisite.

Effective Date: January 2008 – February 2018

Learning Outcomes: Upon meeting the requirements of this certification, the installer will be able to:

- Reduce uncontrolled air movement by creating continuous durable air pressure boundaries in attics, side attics, crawl spaces and other accessible buffer zones by installing and connecting appropriate materials in a durable fashion.
- Prepare attic spaces and crawlspaces including confirmation of air sealing completeness before the installation of loose fill, blanket, or rigid board insulation.

Major topics include:

- Energy concepts
- Data analysis
- Blower door testing
- Duct blasting

Assessment criteria: Oral Exam and Practicum (Field Evaluation of abilities).

Credit Recommendation: In the lower division associate/baccalaureate degree category, 3 credits in Sustainable Energy, or Sustainable Management, or Green Building. *Note: To be eligible for the credit award, participants must have been current in the certification during the effective dates noted on this report.*

Credit Rationale: This certification requires practical knowledge associated with the application of standard principles.

Review Summary

The team includes the following comments based on their review of these eight certifications:

- In 2012 80% of the 9,879 people who took the various BPI certification tests passed.
- According to BPI, individuals who participate in the development of BPI test questions or on other scheme committee meetings are looked at in the following way through application:
 - Industry category and sector they represent
 - Technical experience related to:
 - General building science to existing homes
 - Specialty in one or more disciplines
 - Energy modeling
 - Solar and other renewable energy sources
 - Previous committee service (relevant building performance-related organizations, education, and services)
 - Familiarity with codes, standards, permitting processes, inspections, etc
 - Industry certifications held
 - Relevant degrees
 - Work experience related to committee work
- All certifications are valid for a three year period. CEUs are accepted for some of the certifications in the recertification process; however, the two multi-family certifications require a retest.