
SUSTAINABLE HOMES PROFESSIONAL (SHP)



SHP is an interactive six-month accreditation program that provides participants with the opportunity to develop the technical skills and knowledge required to design and build high-performance homes. Each two-day module integrates lecture and discussion, hands-on exercises and tours of certified homes. Outside work includes homework assignments, quizzes, readings and a final class project that can be directly applied to a real-life design/build project. An accreditation exam allows participants to earn the designation of an accredited Sustainable Homes Professional (SHP). Earth Advantage

provides marketing support to help graduates gain visibility as informed professionals and ongoing networking opportunities.

Course Modules

- Module 1: Introduction & Integrated Design Process
- Module 2: Building Science Fundamentals
- Module 3: High Performance Building Envelopes
- Module 4: Mechanical Systems & Performance Testing
- Module 5: Health, Materials & Water
- Module 6: Synthesis, Final Projects & Certification Exam

(Note: Modules 1-5 can be taken as individual two-day courses)

Learning Objectives

- Learn sustainable building best practices from award-winning experts
- Put principles into practice with a cumulative hands-on final project
- Enhance your understanding of building science and how a home functions as a system
- Learn what it means for a home to be energy, water, and resource efficient while maintaining a safe, comfortable, healthy building
- Explore the full breadth of green building practices from site layout to flooring selection
- Gain a builder/designer-centric approach to Passive House, Net-Zero, Earth Advantage®, LEED® for Homes, ENERGY STAR®, Living Building Challenge™, and other certification program standards

Benefits

- 10 site visit tours to certified green homes and 5 guest speaker presentations
- Valuable networking opportunities with green building experts and fellow accredited SHPs that will help participants develop a strong referral network
- Marketing strategies, tools & support to strengthen the business case for green building
- Professional differentiation via accredited SHP designation and use of logo
- Personalized professional profile listing on the Earth Advantage website
- SHP Manual, Resource Guide and the textbooks.

Course Length: 6 monthly two-day modules (12 days total)

Note: Individual modules cost \$295 each and can be completed non-sequentially in order to achieve SHP accreditation.

Continuing Education

- **BPI:** 42 total units for all 6 modules; 7 per module
- **AIA:** 84 total LU/HSW credit hours for all 6 modules; 14 per module
- **CCB:** 84 Series B credit hours *(currently pending approval)*

- **OR Real Estate Agency:** 84 total credit hours for all 6 modules; 14 per module
- **OR Appraiser Board:** 56 total credit hours for modules 2-5, 14 per module 2-5
- **Clackamas Community College:** 6 total credits (100-level) for all 6 modules; 1 per module
- **Earth Advantage® Broker:** 84 total credit hours; 14 per module
- **Accredited Green Appraiser (AGA):** 84 total credit hours; 14 per module

Suggested Course Fee

- Earth Advantage Builders & EA Professionals (AGAs, EA Brokers, CAKE/EPS Auditors): \$1,400
- HBA Members, CSBAs & PHnw Members: \$1,500
- General Admission: \$1,625

Note: \$100 early bird discounts are also available and typically expire 1 month prior to course start.

Course Participant Testimonials

"I considered myself knowledgeable about green building, but thought I'd benefit from a refresher. This class went way beyond my expectations by providing loads of useful information that was new to me, and by challenging my assumptions. I feel much better informed & will be able to offer my clients more comprehensive architectural services as a result. The course was well worth the investment of time and energy, and I highly recommend it to anyone within the building industry. We must lead, not follow."

- Keyan Mizani, Architect, SHP | eMZed Architecture LLC

"Since receiving my SHP certificate in the fall, I have been able to up-sell two different projects on energy/efficiency upgrades, expand a smaller kitchen/bath remodel job into a much larger whole-house approach that addresses a long-term vision of efficient living, and am currently proposing another whole-house retrofit. I attribute much of these additional sales to the knowledge gained during the SHP course. I have greater confidence and knowledge when discussing energy efficiency, advanced building concepts, solar/alt-energy options and future planning, and, generally, green building as a whole."

- Ryan Weeden, Builder, Owner, SHP | Four Square Design Build LLC

Note: More testimonials available at www.earthadvantage.org/shp

SHP | MODULE 1

INTRODUCTION & INTEGRATED DESIGN PROCESS

This course provides an introduction to and exploration of the philosophy of sustainable building practices in the residential sector. Students will explore the details, benefits, and requirements of various sustainable building programs available in the region. Students will learn about the Integrated Design Process (IDP) and how IDP enables a more cohesive team effort and a smarter, more sustainable design. Process management will be discussed in the context of green building and the course final project will be introduced.

Course Topics

- 1.1 Philosophy of Green Building Programs
 - 1.1.1 Design Process Changes
 - 1.1.2 Construction Process Changes-Quality Management
- 1.2 Green Building Programs
 - 1.2.1 Program Details
 - 1.2.2 Applied Learning

- 1.3 Why Do Builders Want To Use a Green Building Rating System?
 - 1.3.1 What Is the Value of Certification?
 - 1.3.2 How Does Third-Party Verification Contribute to the Value?
- 1.4 Integrated Design Process
 - 1.4.1 Benefits of IDP
 - 1.4.2 Implementing IDP
- 1.5 Administrative and Construction Management Process Impacts
 - 1.5.1 Incorporating Sustainability into Your Practice
 - 1.5.2 Incorporating Your Practices into Green Building Programs
 - 1.5.3 Codes and Policies
 - 1.5.4 Occupancy and Owner's Manuals
- 1.6 The Importance of Place
 - 1.6.1 Integrated Holistic Energy Design
 - 1.6.2 Analysis of Site Orientation
 - 1.6.3 Other Site Influences

Learning Objectives

- Explore the philosophy, necessity, and benefits of various sustainable building programs
- Evaluate various sustainable building programs and distinguish their features
- Identify the process changes necessary to achieve green building goals
- Articulate the intent and application of Integrated Design Processes (IDP)
- Describe strategies to incorporate planning, implementation, and documentation into their next project
- Understand how a project site influences form, energy, water management, and comfort

Course Features

- Day 1: Guest speaker presentation
- Day 2: Two site visits to certified green homes

Course Length: Two days (14 clock hours)

Continuing Education:

- **BPI:** 7 units
- **AIA:** 14 LU/HSW
- **CCB:** 14 Series B credit hours (*currently pending approval*)
- **OR Real Estate Agency:** 14 credit hours
- **Clackamas Community College:** 1 credit (100-level)
- **Earth Advantage® Broker:** 14 credit hours
- **Accredited Green Appraiser (AGA):** 14 credit hours

Course Fee: General Admission - \$295

SHP | MODULE 2

BUILDING SCIENCE FUNDAMENTALS

This course provides an exploration of the fundamental laws that govern the dynamic flows within a building in order to understand the interconnectedness of house systems. These fundamentals are necessary tools to use when making design, construction, and operation decisions that affect the sustainability of projects. Students will analyze best practices for managing thermal, air, and moisture flows to create a house that is healthy, safe, energy efficient, and durable.

Course Topics

- 2.1 Fundamental Natural Laws of Thermodynamics
 - 2.1.1 Thermal Flows (Heat Transfer)
 - Conduction, Convection, Radiation
 - 2.1.2 Air
 - Uncontrolled Air Movement
 - Mechanisms of Air Flow
 - 2.1.3 Moisture
 - Water Management
 - Moisture Management
 - Transport Mechanisms
- 2.2 U-value and R-value Calculations

Learning Objectives

- Explain the natural laws that drive the thermal, air, and moisture flows within a house
- Develop strategies for analyzing how dynamic flows affect the performance of a house
- Calculate the overall R-values of various house assemblies and analyze potential efficiency improvements
- Calculate wall assembly U-factors and evaluate the optimum orientation of a house
- Understand how improving building performance affects indoor air quality
- Describe potential water management strategies
- Select appropriate design features and assemblies according to project objectives
- Integrate building envelope details into plans and specifications

Course Features

- Day 1: Guest speaker presentation
- Day 2: Two site visits to certified green homes

Course Length: Two days (14 clock hours)

Continuing Education:

- **BPI:** 7 units
- **AIA:** 14 LU/HSW
- **CCB:** 14 Series B credit hours (*currently pending approval*)
- **OR Real Estate Agency:** 14 credit hours
- **OR Appraiser Board:** 14 credit hours (*currently pending approval*)
- **Clackamas Community College:** 1 credit (100-level)

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- **Accredited Green Appraiser (AGA):** 14 credit hours

Course Fee: General Admission - \$295

SHP | MODULE 3

HIGH PERFORMANCE BUILDING ENVELOPES

This course explores various high performance wall and roof assemblies, including continuous exterior insulation, truss walls, double-stud walls, SIPs, staggered stud framing, I-joist, and more. Participants learn principles that can be applied to existing homes and new construction projects, including durable wall design, insulation strategies and air sealing, product selection, and construction. The course addresses the importance of performance testing and diagnostics to verify the performance of installed equipment and the home's envelope.

Course Topics

- 3.1 Building Envelope Performance
 - 3.1.1 Value of Constructability
 - 3.1.2 Design Choices
 - Existing Assemblies
 - 3.1.3 Implementation
 - Quality Management Planning
 - Communication with Construction Team
 - Insulation and Air Sealing
 - Moisture Management and Vapor Permeability
 - 3.1.4 Overview of Wall and Roof Assemblies
 - Walls:* 2x6; 2x6 with exterior rigid foam; double stud; staggered stud 8-inch; I-joists; SIPs; ICF
 - Roofs:* standard truss; raised heel truss; parallel chord cantilevered truss; I-Joist (vaulted)
- 3.2 Performance Testing and Diagnostics

Learning Objectives

- Describe high performance building methods for insulation, air sealing, and weatherization
- Select appropriate design features and assemblies according to project objectives
- List methods for building high performance roofs for both new and existing homes
- Identify when and by whom these methods are used during the pre-insulation, post-drywall, and siding installation phases of construction
- Explain the importance of performance testing and diagnostics to verify the performance of installed equipment and the home's envelope

Course Features

- Day 1: Guest speaker presentation
- Day 2: Two site visits to certified green homes

Course Length: Two days (14 clock hours)

Continuing Education:

- **BPI:** 7 units
- **AIA:** 14 LU/HSW
- **CCB:** 14 Series B credit hours (*currently pending approval*)
- **OR Real Estate Agency:** 14 credit hours
- **OR Appraiser Board:** 14 credit hours (*currently pending approval*)
- **Clackamas Community College:** 1 credit (100-level)
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Course Fee: General Admission - \$295

SHP | MODULE 4

MECHANICAL SYSTEMS & PERFORMANCE TESTING

This course provides an overview of load reduction and an exploration of many design and product options for conditioning systems within a home. Just as performance testing is necessary to verify the envelope's construction, performance testing and verification of systems are also key components to creating high-performance sustainable homes.

Course Topics

- 4.1 Integrated System Design
 - 4.1.1 Review Climate Responsiveness/Passive Strategies
 - 4.1.2 Review Load Minimization
 - 4.1.3 Fuel Choice and Future Proofing
 - 4.1.4 Integrating Mechanical Systems
 - 4.1.5 Lighting
 - 4.1.6 Sound
- 4.2 Performance Testing & Verification
 - 4.2.1 Forced Air Systems
 - 4.2.2 Ventilation System Verification
 - 4.2.3 Measurement & Verification

Learning Objectives

- Recognize the relative impact of various building components and system types on the total energy load of a house.
- Become familiar with residential system types, their applications, limitations, and benefits.
- Explain lighting design approaches and technologies, as well as daylighting benefits and limitations.
- Recognize various types of performance testing and verification techniques and analysis.
- Complete room-by-room load calculations for an example house and select appropriate systems according to the project objectives.

Course Features

- Day 1: Guest speaker presentation
- Day 2: Two site visits to certified green homes

Course Length: Two days (14 clock hours)

Continuing Education:

- **BPI:** 7 units
- **AIA:** 14 LU/HSW
- **CCB:** 14 Series B credit hours (*currently pending approval*)
- **OR Real Estate Agency:** 14 credit hours
- **OR Appraiser Board:** 14 credit hours
- **Clackamas Community College:** 1 credit (100-level)
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- **Accredited Green Appraiser (AGA):** 14 credit hours

Course Fee: General Admission - \$295

SHP | MODULE 5

HEALTH, MATERIALS & WATER

This course provides an in-depth look at the rationale for designing and building a healthy indoor environment while conserving natural resources. Participants will explore various health implications associated with design, material selection, and construction methods. Innovative water conservation strategies and construction waste management strategies will also be analyzed. Most importantly, successful integration of these strategies will be emphasized during activities, course discussions, and site visits to two high performance home projects.

Course Topics

- 5.1 Health Impacts of the Built Environment
 - 5.1.1 Types of Pollutants and Risks
 - 5.1.2 Prevention and Mitigation: Indoor Pollutants
 - 5.1.3 Prevention and Mitigation: Outdoor Sources
- 5.2 Materials
 - 5.2.1 Green Materials Considerations
 - 5.2.2 The Ideal Green Material – Does it Exist?
 - 5.2.3 Green Materials Tools and Resources
 - 5.2.4 Implementation
- 5.3 Construction Waste Management
- 5.4 Water
 - 5.4.1 The Need for Water Conservation
 - 5.4.2 Water Conservation Strategies
 - 5.4.3 Site Water Management

Learning Objectives

- Document health risks in a home and list healthy and efficient alternatives to traditional materials and technologies.
- Analyze various building materials using various green criteria and identify local and regional sources for optimum material selection.

- Practice a holistic materials approach concerning health and life cycle assessment.
- Explore strategies to improve water conservation both within a home and on site, and to optimize a site's stormwater management.

Course Features

- Day 1: Guest speaker presentation
- Day 2: Two site visits to certified green homes

Course Length: Two days (14 clock hours)

Continuing Education:

- **BPI:** 7 units
- **AIA:** 14 LU/HSW
- **CCB:** 14 Series B credit hours (*currently pending approval*)
- **OR Real Estate Agency:** 14 credit hours
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Course Fee: General Admission - \$295

SHP | MODULE 6 SYNTHESIS, FINAL PROJECTS, & CERTIFICATION EXAM

This course will utilize the knowledge and skills acquired in Modules 1-5 and will emphasize the integration of these into students' own design and construction process. The end goal is to have the tools and confidence to provide comprehensive green process management to future projects.

Course Topics

- 6.1 Importance of Process Management
- 6.2 Final Project Presentations
- 6.3 Course Review
- 6.4 Marketing yourself as a Sustainable Homes Professional
- 6.5 Certification Exam
- 6.6 Graduation

Learning Objectives

- Identify stages within the integrated design process (IDP) and potential team members to involve in an integrated project.
- Utilize project management tool developed throughout course.
- Identify strategies within each project stage to meet project objectives.
- Create your own green project process management tool.
- Promote sustainable building and design by passing forward information, skills, and inspiration gained in this course.

Course Length: Two days (14 clock hours).

Continuing Education:

- **BPI:** 7 units
- **AIA:** 14 LU/HSW
- **CCB:** 14 Series B credit hours (*currently pending approval*)
- **OR Real Estate Agency:** 14 credit hours
- **Clackamas Community College:** 1 credit (100-level)
- **Earth Advantage® Broker:** 14 credit hours
- **Accredited Green Appraiser (AGA):** 14 credit hours

Course Fee: General Admission - \$295

Note: This module is not recommended to be taken on an individual basis, unless necessary for SHP course series completion.