



## **Green Building & Durability by Design**

*Course Description:*

Green building is a whole systems approach to the design, construction and operation of buildings – from the early stages of development through the final finishes in the home. This approach benefits both builders and homeowners by reducing resource consumption and improving livability. Green building benefits are spread throughout the systems and features of the home. Green buildings use recycled-content building materials, consume less energy and water, have better indoor air quality and use less wood fiber than conventional homes. Green homes reduce potentially carcinogenic volatile organic compounds and formaldehyde from the interior and construction waste is often recycled and remanufactured into other building products. Building green is good for both the economy and the environment. By applying a sustainable perspective to design, construction and remodeling, green building brings the benefits of resource conservation, energy savings and healthy living. This course is also designed to raise the awareness and understanding of building durability as a design consideration in housing. It covers basic concepts of durability and presents recommended practices including numerous construction details and design data for matters such as moisture management, ultraviolet protection, insects, decay, corrosion and natural hazards. Some attention is also given to maintenance issues such as normal wear-and-tear, aesthetics, and functions not immediately associated with durability.

*Course Hours:*

7 Hours

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## Course Outline and Learning Objectives

<b>Module</b>	<b>Learning Objectives</b>	<b>Time</b>
<i>Course Orientation</i>	1. Explain content and layout of course as well as how to complete the course to receive the certificate of completion.	2 min
<i>Acknowledgment of Orientation</i>		N/A
<i>Overview of Green Building</i>	2. Introduction <ul style="list-style-type: none"> <li>a. About Green Building</li> </ul> 3. Fundamentals of Green Building <ul style="list-style-type: none"> <li>a. Natural Resource Conservation</li> <li>b. Energy Efficiency</li> <li>c. Indoor Air Quality</li> </ul> 4. Benefits of Green Building <ul style="list-style-type: none"> <li>a. Cost Consideration</li> </ul> 5. The student will understand that green building is the convergence of three fundamental objectives: conservation of natural resources, increasing energy efficiency and improving indoor air quality.	7.2 min
<i>How to Start Building Green</i>	6. How to Start Building Green <ul style="list-style-type: none"> <li>a. Getting Started</li> </ul> 7. Green Building Packages <ul style="list-style-type: none"> <li>b. Natural Resource Package</li> <li>c. Energy Efficiency Package</li> <li>d. Indoor Air Quality Package</li> </ul> 8. The student will learn that green homes offer higher quality since most products were developed to perform better than the conventional products they replace.	4.3 min
<i>Green Points</i>	9. The student will have a better understanding of the “Green Points” rating system that has been developed to offer designers, builders, homeowners and municipalities a tool to assess how environmentally friendly or “green” a home is.	1 min

<i>Review 1</i>	10. Review Overview of Green Building, How to Start Building Green, and Green Points	10 min
<i>Quiz 1</i>	11. Assessment of Green Building, How to Start Building Green, and Green Points	12 min
<i>Green Building Methods &amp; Materials</i>	12. Community Design Issues 13. Site 14. Foundation 15. Structural Frame 16. Exterior Finish 17. Plumbing 18. Electrical 19. Appliances 20. Insulation 21. Windows 22. Heating, Ventilation and Air Conditioning (HVAC) 23. Renewable Energy and Roofing 24. Natural Heating and Cooling 25. Indoor Air Quality and finishes 26. Flooring 27. The student will have a set of guidelines and resources to assist in developing and implementing green building packages into design projects.	53 min
<i>Review 2</i>	28. Review of Green Building Methods & Materials	10 min
<i>Quiz 2</i>	29. Assessment of Green Building Methods & Materials	33 min
<i>Selling Green Houses</i>	30. Market Differentiation 31. Education Your Sales Staff 32. Convey the Benefits 33. High Quality, Environmentally Sound Products 34. More Durable/Lower Maintenance Products 35. Products and Practices that Provide Greater Comfort and Lower Utility Bills 36. Healthier Products and Practices for Families	4.4 min
<i>Summary of Green Building Benefits</i>	37. Summary	1 min

<i>Review 3</i>	38. Review of Selling Green Houses and Summary	11 min
<i>Quiz 3</i>	39. Assessment of Selling Green Houses and Summary	5 min
<i>Concepts of Durability</i>	<p>40. Durability Requires Commitment</p> <p>41. General Concepts</p> <p>42. What is Durability?</p> <p>43. Building Codes and Durability</p> <p>44. Factors Influencing Durability</p> <p>45. Common Durability Issues</p> <p>46. The student will be become aware of many “tried and true” practices that add to the durability of residential buildings.</p> <p>47. The student will know that achieving cost-effective and durable construction requires a reasonable commitment in the planning, design and construction of houses.</p>	19.6 min
<i>Ground &amp; Surface Water; Rain &amp; Water Vapor</i>	<p>48. General Concepts</p> <p>49. Recommended Practices</p> <ul style="list-style-type: none"> <li>a. Preliminary Site Investigation</li> <li>b. Site Grading and Surface Water Drainage</li> <li>c. Foundation Construction</li> <li>d. Frost Protection</li> </ul> <p>50. The student will understand that building a durable home is relatively simple if the right information and guidance is available.</p>	29.6 min
<i>Review 4</i>	51. Review of Concepts of Durability, Ground & Surface Water, Rain & Water Vapor	11 min
<i>Quiz 4</i>	52. Assessment of Concepts of Durability, Ground & Surface Water, Rain & Water Vapor	23 min
<i>Sunlight; Insects</i>	<p>53. Recommended Practices</p> <ul style="list-style-type: none"> <li>a. Overhangs</li> <li>b. Light Colored Exterior Finishes</li> <li>c. UV Protective Glazing</li> <li>d. UV Resistant Materials</li> <li>e. Landscaping for Shading</li> <li>f. Chemical Treatment</li> <li>g. Termite Shield</li> </ul>	13.3 min

	h. Termite-Resistant Building Materials	
<i>Review 5</i>	54. Review of Sunlight; Insects	11 min
<i>Quiz 5</i>	55. Assessment of Sunlight; Insects	15 min
<i>Protection Against Decay &amp; Corrosion; Natural Hazards</i>	56. General Concepts 57. Recommended Practices a. Separation from Ground b. Exterior Wood Protective Finishes c. Preservative Treated Wood d. Fasteners and Corrosion Resistance e. Alternatives to Wood Exteriors f. Hurricane-Prone Areas g. Earthquake-Prone Areas h. Inspection i. Flood-Prone Areas	20.4 min
<i>Miscellaneous &amp; Conclusion</i>	58. General Concepts 59. General Recommended Practices 60. Plumbing Recommended Practices 61. HVAC Recommended Practices 62. Exterior Finishes Recommended Practices 63. The student will have a wealth of technical information and construction details to be able to incorporate durable design details into a new residence.	23 min
<i>Review 6</i>	64. Review of Protection Against Decay & Corrosion; Natural Hazards, Miscellaneous & Conclusion	11 min
<i>Quiz 6</i>	65. Assessment of Protection Against Decay & Corrosion; Natural Hazards, Miscellaneous & Conclusion	22 min
<i>End of Course Survey</i>	66. Students provide feedback	8 min
<i>Next Steps</i>	67. Describe what happens now that the student has completed the course	1 min
	<b>Total Time (50 min = 1 hour)</b>	<b>362 min</b>