

# Table of Contents

---

|                                   |    |
|-----------------------------------|----|
| <b>Overview</b> .....             | v  |
| <b>Introduction</b> .....         | ix |
| <b>Self-Assessment Quiz</b> ..... | x  |
| <b>Course Schedule</b> .....      | xi |

## **Introduction**

|   |     |
|---|-----|
| AI Green Registry Course Requirements ..... | 1   |
| Identify the Green House(s).....            | 2   |
| Self-Assessment Quiz and Solutions .....    | 2–3 |
| Required Textbook.....                      | 3   |

## **Part 1. Defining Green and Understanding the Elements of Green Building**

|  |       |
|--|-------|
| Preview: Learning Objectives .....                                       | 5     |
| Green Building: What Is a Green Building or High-Performance House?..... | 5–6   |
| Six Elements of Green Building Identified .....                          | 6     |
| Case Study: Element 1: Site Element.....                                 | 7–11  |
| Element 2: Water Efficiency Described .....                              | 11–12 |
| Element 3: Energy Element Described.....                                 | 12–14 |
| Element 4: Indoor Air Quality Described .....                            | 14–16 |
| Element 5: Materials Described.....                                      | 17    |
| Element 6: Operations and Maintenance Described .....                    | 17    |
| Green Certifications.....  | 17–18 |
| Challenges of Valuing Green.....   | 18–23 |
| Competency Concerns .....  | 23–28 |
| Scope of Work.....   | 29    |
| Appraiser Certification .....  | 30    |
| Sample Letter  |       |

## **Part 2. Review of Methods to Develop Potential Contributory Value of Green or Energy-Efficient Items**

|  |       |
|--|-------|
| Preview.....   | 33    |
| A Review of the Appraiser’s Toolbox .....                      | 33–34 |
| Cost Approach .....  | 35–38 |
| Income Approach .....  | 39–46 |
| Sales Comparison Approach .....                                | 46–48 |
| Paired Data Analysis.....                                      | 49    |
| Practice Test .....  | 49–50 |
| Supporting Adjustments.....                                    | 50    |
| Supporting Adjustments (Example Case Study).....               | 50–54 |
| Overview: Residential Green and Energy Efficient Addendum..... | 54–55 |
| Describing the High Performance House.....                     | 55–67 |
| Appraiser Independence .....                                   | 67–69 |
| Published Resource.....  | 70    |

## **Part 3. Green Residential Case Study**

|   |       |
|---|-------|
| Preview: Learning Objectives .....                            | 75    |
| Case Study Introduction: Group Work Valuation Assignment..... | 75–76 |
| Case Study Questions and Solutions .....                      | 76–79 |
| Evaluations .....   | 79    |

## **Part 4. Published Studies as Secondary Data and Overall Review for Exam**

|   |       |
|---|-------|
| Preview: Learning Objectives .....      | 81    |
| Published Studies – Secondary Data..... | 81–82 |
| Practice Test .....                     | 83    |
| Exam Information .....                  | 83–84 |

# Overview

---

## Course Description

*Case Studies in Appraising Green Residential Buildings* was written for appraisers, underwriters, appraisal reviewers, real estate agents/brokers, and quality control personnel. The appraisal of the high-performance (green) house offers a challenge to appraisers because this type of construction is new in many markets. High-performance construction is a growing market that is continually moving into a large part of the U.S. markets.

As the building code and the International Energy Code Compliance increase building requirements, it moves the construction of residential properties toward the high-performance category. Existing homes must become retrofit to compete with these homes. Appraisers need to update their skills and knowledge of building and energy codes to competently apply valuation methodology. Current valuation techniques have the capacity to reflect sustainability issues, but it is incumbent upon appraisers to understand the new building science and identify resources that will assist them in applying current methods.

This course begins with a review of the main points given in the *Introduction to Green Buildings: Principles & Concepts* course. It moves beyond that introductory course by using a few mini case studies from the textbook to apply green building elements and one main case study that implements the appraisal methodology reviewed in this course. The case study reveals ways high-performance features can be implemented using the current appraisal forms with supplements like the AI Residential Green and Energy Efficient Addendum to meet appraisal standards regarding identification of physical, economic, and locational features of the property. In groups, the class will work through the case study data to support adjustments to sales. This type of group work allows appraisers to understand how their peers would handle a similar appraisal problem.

This course provides a brief overview of the AI Residential Green and Energy Efficient Addendum, and by including it in the case study, participants will benefit from seeing how it complements the 1004 Form. The textbook for this course, *Residential Green Valuation Tools*, was published in 2014 by the Appraisal Institute. Participants will find this text a valuable resource for their everyday work assignments.

This course is one of a series of courses that are part of the Appraisal Institute's Valuation of Sustainable Buildings Professional Development Program. For more information about the program, see Professional Development Programs on the Appraisal Institute Web site at [www.appraisalinstitute.org](http://www.appraisalinstitute.org).

**Note.** Residential and Commercial Valuation of Solar is approved by GBCI for 7.5 CE hours.

## Learning Enhancements

This course has been designed with a variety of elements to enhance your learning experience.

- **Preview.** To give you a taste of what is to come, each Part begins with a Preview page, which includes a brief overview of the content, learning objectives to consider as you move through the content, and learning tips that will assist you in understanding the information presented.
- **Learning Objectives.** Each learning objective covers essential information you need to know to fully understand the concepts in the course. Review them before the Part begins so that you have a frame of reference as you move through the material. At the end of each Part, reread the objectives. Are you able to perform what is stated? If not, this is the time to ask your instructor for help or review the concepts that you do not understand.
- **Examples and Problems.** Supplementing the discussions, we've included examples and problems to help you visualize and practice what you are learning.
- **Case Studies.** The case studies in the course contain real-world exercises that provide practice in applying tools and methods to appraise green homes.
- **Solutions.** The solutions to the practice tests and case study questions are provided behind the solutions tab in the course handbook.
- **Green Resources.** Tap a variety of online Green Resources from our Web site at [www.appraisalinstitute.org/education/education-resources/green-building-resources](http://www.appraisalinstitute.org/education/education-resources/green-building-resources). Topics are expanded regularly and include legislation, national and state government sites and programs, databases, design, and solar energy. This free benefit is available only to class participants. Appraisal Institute Designated members, Candidates for Designation, Practicing Affiliates, and Affiliates receive indefinite access; all other class participants are granted two-year admittance.
- **Review.** Each part ends with a review that includes the learning objectives and key terms and concepts covered. In addition, we've provided recommended readings from other sources that will reinforce what you have learned in class.
- **Practice Tests.** Practice tests are included at various points within the materials. The questions are similar to the types of questions you might find on the exam. Answering the fill-in-the-blank and multiple-choice questions will help you assess whether or not you know the information that was covered.
- **Digging Deeper.** Throughout Appraisal Institute courses, you will find content labeled *Digging Deeper*. Generally, the instructor will not cover this material in class. More advanced participants or those looking for an extra challenge can refer to the Digging Deeper sections while the rest of the class is finishing up work on individual or small group activities. Content identified as Digging Deeper

will not appear on the exam. However, appraisers preparing for the Comprehensive Exam should be familiar with it, as well as all other material contained in the Course Handbook, whether or not it is presented in class.

## Classroom Guidelines

To make the classroom environment a positive experience, please follow these guidelines:

- 100% attendance is required. No exceptions.
- Limit use of computers and wireless devices to classroom projects.
- Communicate with business associates during break time instead of class time.
- Put away reading materials such as newspapers and books that are not used in class.
- Silence cell phones.
- Please do not record the lectures. Recordings are not permitted.
- Refrain from ongoing conversations with those seated near you and other distracting behavior.

## General Information

- **Calculators.** A financial calculator is required. The accepted model used in the course is the HP-12C. Some devices such as the **Apple iPhone** have an HP-12C emulator application. However, because such devices **may not be used during the final exam**, you will need to bring an acceptable calculator to class.
- **Important Note.** Laptops, cellular phones, tablets, iPads, wearable technology (smart watch, Apple Watch, Google Glass, etc.) and other devices that can store data or connect to the Internet are **NOT** permitted during the exam. In addition, all watches, wallets, bags, and purses must be removed and stored out of reach prior to taking the exam.
- **Breaks.** There will be two 10-minute breaks during the morning session and two 10-minute breaks during the afternoon session unless noted otherwise by the course sponsor. The lunch break is one hour.
- **Attendance sheets** will be distributed during class to verify your attendance during the morning and afternoon sessions. Attendance during the entire course is required.
- **Certificates of completion** will be e-mailed after completion of the course.

## Required Text

- Adomatis, Sandra K., SRA, LEED® Green Associate, *Residential Green Valuation Tools*, Appraisal Institute, 2014 (available from the Appraisal Institute Web site. A link for ordering is provided on the course registration page.)

## Recommended Texts

- *The Appraisal of Real Estate*, 14th ed. Chicago: Appraisal Institute, 2013
- *The Dictionary of Real Estate Appraisal*, 6th ed. Chicago: Appraisal Institute, 2015
- *Appraising Residential Properties*, 4th ed. Chicago: Appraisal Institute, 2007
- Rattermann, Mark R., MAI, SRA, *Valuation by Comparison, Residential Analysis and Logic*, Chicago: Appraisal Institute, 2007
- Simmons, Alan F. SRPA, LEED® AP, *An Introduction to Green Homes*, Chicago: Appraisal Institute, 2010
- *Marshall and Swift Green Building Cost Handbook*

## Exam

- 25 multiple-choice questions