

Architectural Design 2

Exam Information	Description
Exam number 632 Items 55 National Career Cluster Architecture & Construction Science, Technology, Engineering & Mathematics Certification available Yes	The Architecture Design 2 industry certification exam assesses learners' proficiency in using 3D Computer-Aided Design (CAD) software to design and model a small residential home. The exam focuses on residential methods and materials of construction, building codes, and Building Information Modeling (BIM).

Exam Blueprint and Performance Skills

Standard	Percentage of exam score
1. Architectural Design and History	8%
2. Cost of Residential Housing	17%
3. Room and Space Planning	20%
4. International Residential Code (IRC)	15%
5. BIM/CAD Modeling Techniques	39%
6. Architecture/Construction Documents	0%

*Includes performance skill evaluation

Standard 1 - Architectural Design and History

Objective 1 Identify the historical influences that contributed to current home styles.

Objective 2 Recognize different American architectural styles.

1. Farmhouse
2. Rambler/Ranch
3. Cape Cod/Bungalow
4. Prairie
5. American Colonial
6. Victorian
7. Queen Anne
8. Mid-century Modern
9. Federalist
10. Craftsman

Objective 3 Discuss current trends in architecture.

1. Net-zero housing
2. 3D printed
3. Modular construction
4. Affordable Housing
 - a. Apartments
 - b. Town homes
 - c. Condos
 - d. Tiny Homes

Optional: Standard performance evaluations on the final page of this document

Standard 2 - Cost of Residential Housing

Objective 1 Discuss the cost of building a residential home.

1. Materials Cost
2. Labor Cost
3. Property cost
4. Planning and Permitting
5. Potential added amenities

6. Housing market
7. Maintenance

Objective 2 Compare the initial and ongoing costs associated with different types of construction.

1. Stick Framing
2. Brick Veneer
3. Panel Systems

Optional: Standard performance evaluations on the final page of this document

Standard 3 - Room And Space Planning

Objective 1 Discuss factors that are important in the design of the following rooms or areas:

1. Living Room
2. Great/Family Room
3. Entry/Foyer
4. Porch
5. Patio or Deck
6. Bedroom
7. Kitchen
8. Bathroom
9. Storage
10. Garage
11. Laundry
12. Mechanical Room

Objective 2 Discuss accessibility requirements for good functional utility.

1. Traffic flow
2. Storage
3. Layout

Objective 3 Identify the areas or zones of a residential floor plan.

1. Common zones in residential homes
 - a. Habitable
 - b. Non-Habitable
2. Common areas of a residential home
 - a. Public
 - b. Private

- c. Service or work Areas

Optional: Standard performance evaluations on the final page of this document

Standard 4 - International Residential Code (IRC)

Candidates will identify the basic considerations in using the International Residential Code (IRC).

Objective 1 Understand basic regulations concerning home design and construction

1. Discuss International Residential Code (IRC) implications for a residence.
2. Discuss FHA minimum standards for a residence.
3. Understand the existence of local zoning restrictions.
4. Understand the existence of variance and covenants a. HOA b. CCR

Objective 2 Understand why we have codes and how to apply them to design.

Objective 3 Identifies local ordinances relating to site development.

Objective 4 Identify code requirements that deal with health and safety

Objective 5 Identify code requirements relating to utilities.

1. Electrical
 - a. Placement of outlets
 - b. Voltage of outlets
 - c. Placement of switches
 - d. Bathroom fans
2. Plumbing
 - a. Size of tub
 - b. Water Closet location
3. Energy efficiency
 - a. R-value
 - b. U-value

Optional: Standard performance evaluations on the final page of this document

Standard 5 - BIM/CAD Modeling Techniques

Objective 1 Navigate the BIM/CAD software interface.

1. Create and use the different views and how they are navigated
2. Adjust views through view ranges and line styles
3. Define visibility/ graphics overrides and object styles
4. Start a new project and create levels and grids to reference
5. Create walls and adjust their settings
6. Understand wall types and the structure of walls
7. Modify elements
8. Place components such as doors, windows, and components
9. Create floors, ceilings, and roofs
10. Create curtain walls
11. Create stairs
12. Use model/component groups
13. Create room elements such as tags, fill plans, and schedules
14. Use a title block family to create sheets

Optional: Standard performance evaluations on the final page of this document

Standard 6 - Architecture/Construction Documents

Architecture/Construction Documents.

Objective 1 Identify and create commonly used documents used in the Architecture/Construction industry:

1. Cover Sheet with elevation or rendering
2. All four elevations at the correct scale
3. Dimensioned floor plan Can include electrical or have separate electrical plan
4. Dimensioned foundation and basement plan
 - a. Can include electrical or have separate electrical plan
5. Cabinet and millwork elevations a. Millwork dimensioning standards
6. Typical wall section
7. Building section
8. Stair detail/section
9. Framing details
10. Dimensioned Site plan
 - a. Setbacks

- b. Utilities
 - c. etc.
11. General Notes

Optional: Standard performance evaluations on the final page of this document

Performance Skills Evaluation

Exam name: Architectural Design 2

Candidate Name: _____

Performance assessments may be completed and evaluated any time before the certification is issued. The following performance skills can be used in connection with the associated standards and exam. The evaluator will function as the subject matter expert to determine if the candidate meets the skills requirements with a Yes/No for passing.

Standard 1 – Architectural Design and History Candidates can identify common home styles and use them in an original home design.	Pass:
Standard 2 – Cost of Residential Housing Candidates can estimate the total cost of a small out building (approx. 200 sq ft.).	Pass:
Standard 3 – Room and Space Planning Candidates can create a basic layout of a residential home.	Pass:
Standard 4 – International Residential Code (IRC) Candidates can create a house plan following local codes and ordinances.	Pass:
Standard 5 – BIM/CAD Modeling Techniques Candidates can navigate and proficiently use a BIM/CAD software to create a model.	Pass:
Standard 6 – Architecture/Construction Documents Candidates can create a complete set of plans for an affordable, single-family dwelling based on your local housing market using BIM software. The home should include a basement and/or second floor.	Pass:

Evaluator Name: _____

Date: _____