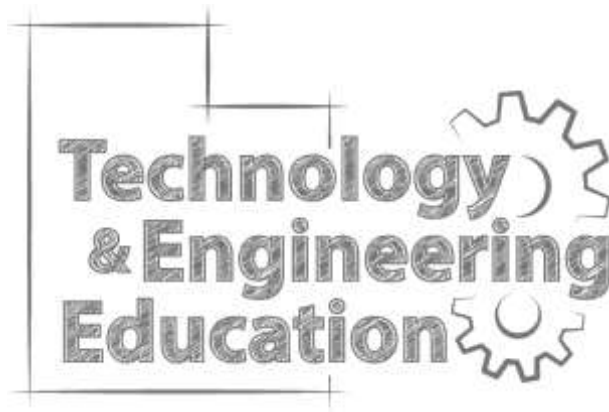# Strands & Standards

CAD ARCHITECTURAL DESIGN 2

COURSE DESCRIPTION

The second in a sequence of courses that prepare individuals for careers in the Architecture, Engineering, and Construction (AEC) industry. This course includes instruction in 3D Computer-Aided Design (CAD) software to design and model a small residential home with an emphasis on residential methods and materials of construction, codes, and Building Information Modeling (BIM).

License Type
Secondary Education 6-12

Required Endorsement
Drafting (CAD), or
Engineering

Intended Grade Level:	10-12
Units of Credit:	0.5
Core Code:	38.01.00.00.042
CE Core Code:	38.01.00.13.042
Prerequisite:	CAD Architectural Design 1
Skill Certification:	632
Test Weight:	0.5

CTE Learning that works for Utah

Strands & Standards

STRAND 1 **Students will be able to understand architectural design fundamentals.**

Standard 1 Identify the historical influences that contributed to current home styles.
- Recognize and describe the design elements of various architectural styles.
- Discuss current trends in architecture.

Standard 2 List family needs that should be considered when planning a dwelling.

Standard 3 Discuss cost per type of construction, affordability, and the cost of amenities.
- Discuss home construction costs using the cost per square foot.

Standard 4 Discuss accessibility requirements for good functional utility.

STRAND 2 **Students will be able to understand room and space planning.**

Standard 1 Discuss factors that are important in the design of the following rooms or areas:
- Living Room
- Great/Family Room
- Entry/Foyer
- Porch
- Patio or Deck
- Bedroom
- Kitchen
- Bathroom
- Storage
- Garage
- Laundry

Standard 2 Identify the areas or zones of a residential floor plan and the code implications.
- Habitable
- Non-Habitable
- Public
- Private
- Living
- Sleeping
- Service or work Areas
- Storage and utility

Standard 3 Understand basic regulations concerning home design and construction.
- Discuss International Residential Code (IRC) implications for a residence.
- Discuss FHA minimum standards for a residence.
- Discuss local zoning restrictions for a residence.

STRAND 3 **Students will identify the basic considerations in using the International Residential Code (IRC).**

Standard 1 Understand the history of codes, how codes are developed, the scope and limitations, and how to use the code.

Standard 2 Understand a code versus a standard, code authority, permits, and inspections.

Standard 3 Identify code requirements relating to site development.

Standard 4 Identify code requirements to provide structural safety.
- Structural Design Criteria
- Foundations
- Framing

Standard 5 Identify code requirement relating to interior and exterior finishes as well as weather protection.

Standard 6   Identify code requirements to provide health and safety.
- Home safety
- Fire safety
- Healthy living environment
- Chimneys and Fireplaces

Standard 7   Identify code requirements relating to utilities and energy usage.
- Electrical
- HVAC
- Plumbing
- Energy efficiency

STRAND 4   **Students will be able to understand and demonstrate Building Information Modeling (BIM) techniques to create BIM architectural drawings to a professional standard.**

Standard 1   Demonstrate proficiency completing the following concepts:
- Navigating the BIM software interface
- Creating and using the different views and how they are navigated
- Adjusting views through view ranges and line styles
- Defining visibility/ graphics overrides and object styles
- Starting a new project and creating levels and grids to reference
- Creating walls and adjusting their settings
- Understanding wall types and the structure of walls
- Modifying elements
- Placing components such as doors, windows, and components
- Creating floors, ceilings, and roofs
- Creating curtain walls
- Creating stairs
- Using model groups
- Adjusting Visual Properties
- Creating room elements such as tags, fill plans, and schedules
- Using a title block family to create sheets

STRAND 5   **Students will create a complete set of plans for a rambler style residence, with a basement, while maintaining less than 1000 square feet on the main floor.**

Standard 1   Provide for all the essential elements of a living structure while optimizing the use of space within the prescribed footprint.

Standard 2   Draw a complete set of construction documents using the accepted symbols and techniques in a clear and precise manner which complies with architectural standards and includes the following:
- Cover Sheet
- General Notes
- Site or Plot Plan
- Foundation Plan
- Basement Plan
- Main Floor Plan
- Floor Framing Plan
- Roof Plan
- Cross Section
- Typical Wall Section
- Stair Detail Plan
- Electrical/HVAC Plan

Skill Certificate Test Points by Strand

Test Name	Test #	Number of Test Points by Strand					Total Points	Total Questions
		1	2	3	4	5		
CAD Architectural Design 2	632							

Performance Objectives

<insert link>