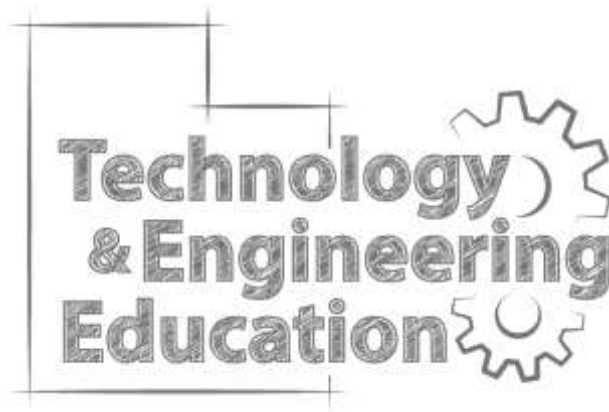


# Strands & Standards

## CAD ARCHITECTURAL DESIGN 3



### COURSE DESCRIPTION

The third 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 model a small commercial building with an emphasis on commercial 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: 38.01.00.00.043

CE Core Code: 38.01.00.13.043

Prerequisite: CAD Architectural Design 2

Skill Certification: 633

Test Weight: 0.5

# Strands & Standards

## **STRAND 1** Students will discover how Building Information Modeling (BIM) is changing how buildings, infrastructure, and utilities are planned, designed, built, and managed.

- Standard 1** Understand how BIM is an intelligent model-based process that provides insight to help you plan, design, construct, and manage buildings and infrastructure.
- Standard 2** Identify the business value of BIM.
- Standard 3** Identify how BIM helps reduce the risk of errors through integrated design, engineering, and fabrication workflows to minimize change orders.
- Standard 4** Identify how BIM helps streamline workflows, maintain more accurate information, and keep construction project moving forward more predictably.

## **STRAND 2** Students will identify the basic considerations in using the International Building Code (IBC).

- 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 basic building occupancies based on their use and how that affects construction types, materials, and building size.
- Standard 4** Identify code requirements to provide adequate fire safety.
  - Fire and smoke protection
  - Passive fire protection (construction techniques)
  - Active fire protection (sprinklers)
- Standard 5** Identify code requirements to provide life safety.
  - Egress requirements to get people out
  - Accessibility to get people in
  - Building safety to protect people from falling
- Standard 6** Identify code requirements to provide health safety.
  - Weather protection
  - Interior Environment
- Standard 7** Identify code requirements to provide structural safety.
  - Structural Design
  - Materials

## **STRAND 3** Student will be able to understand how accessibility codes and guidelines affect all new and some existing commercial construction projects.

- Standard 1** Identify state and federal accessibility requirements of the following:
  - International Building Code (IBC) A117.1-2003
  - ADA 2010 Standards
  - Federal Fair Housing (FH) Act's Accessibility Guidelines

## **STRAND 4** Students will be able to understand and demonstrate BIM techniques to create BIM architectural drawings to a professional standard.

- Standard 1** Demonstrate proficiency completing the following concepts:
- Create a basic 2D family using imported content
  - Create a parametric 3D family
  - Create a custom annotation family
  - Tagging elements
  - Create a custom schedule using the tags
  - Create a legend
  - Create a basic profile for use in sweeps
  - Create a custom profile family and apply it to a wall
  - Create custom mullions and wall panels
  - Create in place components
  - Import CAD data to create a detail
  - Detailing
  - Custom detail components

## **STRAND 5** Students will model and document the remodel of an existing commercial building using “as-built” drawings.

- Standard 1** Demonstrate proficiency completing the following concepts:
- Creating a title block
  - Importing CAD information
  - Modifying CAD information
  - Creating a Site
  - Use phasing to control existing vs. new construction
  - Document demolition and new construction
  - Place plumbing fixtures
  - Customize curtain walls
  - Provide stairs and circulation
  - Add detail to the site using site elements
  - Render the model

- Standard 2** Develop a full set of commercial architectural construction documents that include the following:
- Fully annotated sheets with dimensions, notes, tags, and schedules
    - Use keynotes to limit the amount of text on a drawing
  - Sheet set of typical architectural documentation needed for a commercial construction project
    - Renderings
    - Section Views
    - Elevations
    - Floor Plans
    - Ceiling Plans
    - Roof Plan
    - Interior Elevations
  - Place site components such as trees, plants, people and other items to detail out the project model
  - Publish the project to a digital set

## 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 3	633							

## Performance Objectives

<insert link>