

## 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).

Total Test Questions: 18

Levels: 10-12

Units of Credit: 0.5

Prerequisites: CAD Architectural Design II

## STANDARDS, OBJECTIVES, AND INDICATORS

### STANDARD 1

**10% of Exam Content**

❖ **STUDENTS WILL DISCOVER HOW BUILDING INFORMATION MODELING (BIM) IS CHANGING HOW BUILDINGS, INFRASTRUCTURE, AND UTILITIES ARE PLANNED, DESIGNED, BUILT, AND MANAGED.**

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

### STANDARD 2

**30% of Exam Content**

❖ **STUDENTS WILL IDENTIFY THE BASIC CONSIDERATIONS IN USING THE INTERNATIONAL BUILDING CODE (IBC).**

- Objective 1: Understand the history of codes, how codes are developed, the scope and limitations, and how to use the code.
- Objective 2: Understand a code versus a standard, code authority, permits, and inspections.
- Objective 3: Identify basic building occupancies based on their use and how that affects construction types, materials, and building size.
- Objective 4: Identify code requirements to provide adequate fire safety.
  - 1. Fire and smoke protection
  - 2. Passive fire protection (construction techniques)
  - 3. Active fire protection (sprinklers)
- Objective 5: Identify code requirements to provide life safety.
  - 1. Egress requirements to get people out
  - 2. Accessibility to get people in
  - 3. Building safety to protect people from falling
- Objective 6: Identify code requirements to provide health safety.
  - 1. Weather protection



- Objective 7: 2. Interior Environment  
Identify code requirements to provide structural safety.
1. Structural Design
  2. Materials

## **STANDARD 3**

**20% of Exam Content**

- ◆ **STUDENTS WILL IDENTIFY THE TUDENT WILL BE ABLE TO UNDERSTAND HOW ACCESSIBILITY CODES AND GUIDELINES AFFECT ALL NEW AND SOME EXISTING COMMERCIAL CONSTRUCTION PROJECTS.**

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

## **STANDARD 4**

**7% of Exam Content**

- ◆ **STUDENTS WILL BE ABLE TO UNDERSTAND AND DEMONSTRATE BIM TECHNIQUES TO CREATE BIM ARCHITECTURAL DRAWINGS TO A PROFESSIONAL STANDARD.**

- Objective 1: Demonstrate proficiency completing the following concepts:
1. Create a basic 2D family using imported content
  2. Create a parametric 3D family
  3. Create a custom annotation family
  4. Tagging elements
  5. Create a custom schedule using the tags
  6. Create a legend
  7. Create a basic profile for use in sweeps
  8. Create a custom profile family and apply it to a wall
  9. Create custom mullions and wall panels
  10. Create in place components
  11. Import CAD data to create a detail
  12. Detailing
  13. Custom detail components

## **STANDARD 5**

**33% of Exam Content**

- ◆ **STUDENTS WILL MODEL AND DOCUMENT THE REMODEL OF AN EXISTING COMMERCIAL BUILDING USING "AS-BUILT" DRAWINGS.**

- Objective 1: Demonstrate proficiency completing the following concepts:
1. Creating a title block
  2. Importing CAD information
  3. Modifying CAD information
  4. Creating a Site
  5. Use phasing to control existing vs. new construction
  6. Document demolition and new construction
  7. Place plumbing fixtures



8. Customize curtain walls
9. Provide stairs and circulation
10. Add detail to the site using site elements
11. Render the model

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

