STRANDS AND 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).

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<tr>
<th>Core Code</th>
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<tr>
<td>Concurrent Enrollment Core Code</td>
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<td>Units of Credit</td>
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<td>Intended Grade Level</td>
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<tr>
<td>Prerequisite</td>
<td>CAD Architectural Design 2</td>
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<tr>
<td>Skill Certification Test Number</td>
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<td>Test Weight</td>
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<td>License Type</td>
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<td>Required Endorsement(s)</td>
<td>T&amp;E Drafting (CAD)</td>
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ADA Compliant: September 2018
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
Insert indicator text.
  • 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:
  • ADA 2010 Standards
  • Federal Fair Housing Act’s (FHA’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.
- Sheet set of typical architectural documentation needed for a commercial construction project.
  - Floor Plans & Section Views
  - Exterior & Interior Elevations
  - Ceiling Plans
  - Roof Plan
- Place site components such as trees, plants, people and other items to detail out the project model.

Skill Certificate Test Points by Strand
Example table below. Refer to instructions for specifics.

<table>
<thead>
<tr>
<th>Test Name</th>
<th>Test #</th>
<th>Number of Test Points by Strand</th>
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<td>633</td>
<td>3 9 6 2 10</td>
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Performance Skills
1. Create and maintain a portfolio of exemplary work.
3. Participate in a significant activity that provides each student with an opportunity to render service to others, employ leadership skills, or demonstrate skills they have learned through this course, preferably through participation in a Career & Technical Student Organization (CTSO) such as the Technology Student Association (TSA).