

# Architectural Drafting and Design

Career Cluster	Architecture & Construction
Course Code	21103
Prerequisite(s)	Introduction to Drafting and Design
Credit	.5
Program of Study and Sequence	Foundation Courses, Introduction to Architecture and Construction, Introduction to Drafting and Design, Architectural Drafting and design, Capstone Course
Student Organization	SkillsUSA
Coordinating Work-Based Learning	Job Shadowing, Mentorships, Service Learning, Internships, Apprenticeship
Industry Certifications	ADDA Architectural Apprentice certification <a href="http://www.adda.org">http://www.adda.org</a>
Dual Credit or Dual Enrollment	TBD
Teacher Certification	Architecture & Construction Cluster Endorsement; Construction Pathway Endorsement; Design & Pre-Construction Pathway Endorsement; STEM Cluster Endorsement; Engineering & Robotics Pathway Endorsement; Drafting Endorsement; 7-12 Technology Education Endorsement
Resources	None

## Course Description:

People with careers in design and pre-construction create our future. They turn a concept into a set of plans whether for a component, a system or a building. The plans guide other construction or manufacturing professionals as they continue the building process. These standards, combined with the knowledge and skills students master in the Introduction to Drafting and Design course, will provide students the basis to sit for the ADDA (American Drafting and Design Association) Architectural Apprentice certification. Details of the ADDA competencies addressed in each standard can be found at <http://www.adda.org>.

## Program of Study Application

This is the fourth course in the suggested sequence of the Architectural & Construction career cluster. It is recommended that it is preceded by (1) Foundation Courses, (2) Introduction to Architecture and Construction, and (3) Introduction to Drafting and Design; and followed by (5) Capstone Experience.

**Course Standards**

**Indicator # ADD 1 Understand architectural design fundamentals and history.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 1 Recall	ADD 1.1 Identify architectural products and styles. Examples <ul style="list-style-type: none"> <li>Describe historical influences that contributed to current home styles</li> <li>Describe design elements of contemporary dwellings</li> <li>Discuss current trends in architecture</li> <li>List family needs that should be considered when planning a dwelling</li> </ul>	<ul style="list-style-type: none"> <li>Understanding architectural products and construction styles will ensure quality architectural design.</li> <li>ADDA Apprentice Drafting Competency met: Architecture #6</li> </ul>
Level 2 Skill/ Concept	ADD 1.2 Interpret the fundamentals of framing plans. Examples: <ul style="list-style-type: none"> <li>Justify the components of a typical framed wall</li> <li>Compare the different methods of frame wall construction</li> <li>Interpret the information shown on a ceiling joist span data chart and trusses</li> <li>Draw a typical wall section and full cross sections</li> </ul>	<ul style="list-style-type: none"> <li>Understanding architectural products and construction styles will ensure quality architectural design.</li> <li>ADDA Apprentice Drafting Competency met: Architecture #14</li> </ul>
Level 2 Skill/ Concept	ADD 1.3 Identify building codes and governing bodies. Examples: <ul style="list-style-type: none"> <li>Apply the Uniform Building Code (UBC) to a residential design</li> <li>Design a residence to meet the minimum FHA standards</li> </ul>	<ul style="list-style-type: none"> <li>Understanding architectural products and construction styles will ensure quality architectural design.</li> <li>ADDA Apprentice Drafting Competency met: Architecture #17</li> </ul>
Level 1 Recall	ADD 1.4 Identify residential building materials Examples: <ul style="list-style-type: none"> <li>Evaluate the different siding types that will affect the design of a residence</li> </ul>	<ul style="list-style-type: none"> <li>Understanding architectural products and construction styles will ensure quality architectural design.</li> <li>ADDA Apprentice Drafting Competency met: Architecture #20</li> </ul>

**Notes:**

**Indicator # ADD 2 Understand drawing management, dimensioning, and notations.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 2 Skill/ Concept	ADD 2.1 Examine drawing identification and management techniques used in architectural drafting. Examples: Analyze types and uses of architectural drawings	<ul style="list-style-type: none"> <li>• Properly laid out drawings with the proper information are important to the design of a residence</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #8</li> </ul>
Level 3 Strategic Thinking	ADD 2.2 Illustrate proper dimensioning and notation practices used in architectural drafting. Examples: <ul style="list-style-type: none"> <li>• Choose best location for dimensions</li> <li>• Apply uniform spacing between dimension lines</li> <li>• Fully dimension an object</li> <li>• Correctly use leaders and notes</li> <li>• Use appropriate angles for leaders</li> <li>• Use correct text height</li> <li>• Use architectural style letters and numerals</li> </ul>	<ul style="list-style-type: none"> <li>• Properly laid out drawings with the proper information are important to the design of a residence</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #9</li> </ul>

**Notes:**

**Indicator # ADD 3    Develop a residential plot and foundation system plan.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 4 Extended Thinking	<p>ADD 3.1 Create a plot/site plan for a residence. Examples:</p> <ul style="list-style-type: none"> <li>• Draw a plot/site plan for a residence showing grade elevations against the home, lot contours and corners of the lot for drainage purposes</li> <li>• Show water, power, gas and sewer lines or septic system in plan</li> <li>• Show walks, driveways, patios, and other onsite improvements in plan</li> <li>• Show the relationship of the finished floor elevation and the finished grade around the home</li> </ul>	<ul style="list-style-type: none"> <li>• A properly designed plot/site plan is necessary to assist with subsequent drawings and laying out a residence on a given site.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #7</li> <li>• Acquire employability skills such as working on a team, problem-solving and organizational skills</li> </ul>
Level 3 Strategic Thinking	<p>ADD 3.2 Design footings and foundation for a residence. Examples:</p> <ul style="list-style-type: none"> <li>• Analyze major considerations when designing a footing for a residential foundation</li> <li>• Describe the procedure for staking out a house location</li> <li>• Analyze a typical floor plan to determine the appropriate foundation</li> <li>• Analyze design considerations for wood, concrete, and masonry foundation walls</li> <li>• Calculate the load to be supported by a beam</li> <li>• Draw a foundation plan for a residence</li> </ul>	<ul style="list-style-type: none"> <li>• A properly designed plot/site plan is necessary to assist with subsequent drawings and laying out a residence on a given site.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #15</li> <li>• Acquire employability skills such as working on a team, problem-solving and organizational skills</li> </ul>

**Notes:**

**Indicator # ADD 4    Generate the necessary construction plans to build a residence.**

<i>Webb Level</i>	<i>Sub-indicator</i>	<i>Integrated Content</i>
Level 3 Strategic Thinking	<p>ADD 4.1 Develop a floor plan using accepted symbols and techniques. Examples:</p> <ul style="list-style-type: none"> <li>• List information required on a typical floor plan</li> <li>• Represent typical materials using standard architectural symbols</li> <li>• Draw to scale a residential floor plan using accepted symbols and techniques</li> <li>• Draw dimensions of a floor plan in a clear and precise manner which complies with architectural standards</li> <li>• Recognize the difference between a good and poor drawing of a floor plan</li> <li>• Discuss accessibility requirements for functional utility</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #10</li> </ul>
Level 3 Strategic Thinking	<p>ADD 4.2 Prepare a working drawing of the residence HVAC, lights and electrical needs. Examples:</p> <ul style="list-style-type: none"> <li>• Draw electric and HVAC plans for all floors of an architectural design to comply with National Electrical Code (NEC)</li> <li>• Use correct architectural and national electrical code symbols</li> <li>• Show the correct location of smoke detectors according to code</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #11</li> </ul>
Level 3 Strategic Thinking	<p>ADD 4.3 Design a residential roof plan. Examples:</p> <ul style="list-style-type: none"> <li>• Identify issues associated with roof framing plans</li> <li>• Draw a roof plan</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #12</li> </ul>

<p>Level 2 Skill/ Concept</p>	<p>ADD 4.4 Understand the use of elevations in the design of a residence. Examples:</p> <ul style="list-style-type: none"> <li>• Identify items on elevations (columns &amp; posts, outside material)</li> <li>• Identify the dimensions commonly shown on elevations</li> <li>• Illustrate symbols that are often found on elevations</li> <li>• Draw a typical exterior elevation which demonstrates proper techniques</li> <li>• Draw millwork elevations and special details for kitchen cabinets, bathroom cabinets, wardrobe &amp; utility closet and cabinets</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #13</li> </ul>
<p>Level 3 Strategic Thinking</p>	<p>ADD 4.5 Draw interior and exterior stair details appropriate to those found in a residence. Examples:</p> <ul style="list-style-type: none"> <li>• Draw interior and exterior stair details appropriate to those found in a home that comply with applicable building codes</li> <li>• Show hand rails, guard rails and other safety features in a drawing</li> <li>• Use &amp; label correct material in stair details</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #16</li> </ul>

<p>Level 3 Strategic Thinking</p>	<p>ADD 4.6 Develop door, window, and finishing schedules. Examples:</p> <ul style="list-style-type: none"> <li>• Draw a window schedule that would include window size, make, material, &amp; type of glazing</li> <li>• Draw a door schedule that would include door size, style, type of lockset, special features, &amp; jamb size</li> <li>• Draw a finish schedule that would include different types of wall &amp; ceiling finishes, types of floor coverings, special wainscot wall finishes</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #18</li> </ul>
<p>Level 2 Skill/ Concept</p>	<p>ADD 4.7 Understand basic estimating practices used in the construction industry. Examples:</p> <ul style="list-style-type: none"> <li>• Perform basic math functions (area, square feet/square yard)</li> <li>• Calculate area of geometric shapes (triangle, square, rectangle)</li> <li>• Determine heights</li> <li>• Add dimensions with mixed units</li> <li>• Convert from one unit to another</li> <li>• Determine square footage</li> <li>• Determine cubic yardage</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> <li>• ADDA Apprentice Drafting Competency met: Architecture #19</li> </ul>
<p>Level 4 Extended Thinking</p>	<p>ADD 4.8 Generate final presentation drawings and three dimensional computer model. Examples:</p> <ul style="list-style-type: none"> <li>• Develop a 3D computer model of a design</li> <li>• Develop a presentation to sell a design to a specific audience</li> </ul>	<ul style="list-style-type: none"> <li>• A properly drawn floor plan is essential to developing your other architectural drawings.</li> </ul>

**Notes:**