Texas CTE: Architecture and Construction

Architectural Design II (2017)

Professional Standards/Employability Skills 1

1 The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to: 1.1

- A identify employment opportunities, including entrepreneurship and preparation requirements, in the field of architecture; 1.1.A
- B demonstrate an understanding of group participation and leadership related to citizenship and career preparation; 1.1.B
- C identify employers' expectations and appropriate work habits; 1.1.C
- D apply the competencies related to resources, information, systems, and technology in appropriate settings and situations; and 1.1.D
- E demonstrate knowledge of the concepts and skills related to health and safety in the workplace, as specified by appropriate governmental regulations. 1.1.E

12 The student exhibits employability skills that lead to job success in the architectural design industry. The student is expected to: 1.12

- A demonstrate effective verbal, nonverbal, written, and electronic communication skills; 1.12.A
- B demonstrate effective methods to secure, maintain, and terminate employment; 1.12.B
- C demonstrate positive interpersonal skills, including conflict resolution, negotiation, teamwork, and leadership; 1.12.C
- D evaluate the relationship of good physical and mental health to job success and achievement; 1.12.D
- E demonstrate appropriate grooming and appearance for the workplace; 1.12.E
- F demonstrate appropriate business and personal etiquette in the workplace; 1.12.F
- G exhibit productive work habits and attitudes; and 1.12.G
- H maintain a project portfolio that documents architectural projects using a variety of multimedia techniques. 1.12.H

Teamwork 2

7 The student describes the importance of teamwork, leadership, integrity, honesty, work habits, and organizational skills. The student is expected to: 2.7

- A describe how teams function; 2.7.A
- B use teamwork to solve problems; 2.7.B

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C distinguish between the roles of team leaders and team members; 2.7.C

D identify characteristics of good leaders; 2.7.D

E identify employers' expectations and appropriate work habits; 2.7.E

F define discrimination, harassment, and inequality; 2.7.F

G use time-management techniques to develop and maintain work schedules and meet deadlines; and 2.7.G

H complete work according to established criteria. 2.7.H

Academic Skills 3

2 The student relates core academic skills to the requirements of architecture. The student is expected to: 3.2

A demonstrate effective verbal and written communication skills with individuals from varied cultures, including fellow workers, managers, and customers; 3.2.A

B complete work orders and related paperwork; 3.2.B

C estimate jobs, schedules, and standard industry practices related to legal restrictions; 3.2.C

D read and interpret architectural symbols, schematics, blueprints, work drawings, manuals, and bulletins; and 3.2.D

E apply descriptive geometry related to auxiliary views, revolutions, and intersections. 3.2.E

Technical Knowledge 4

3 The student knows the concepts and skills that form the technical knowledge of architectural computer-aided drafting. The student is expected to: 4.3

A demonstrate knowledge of architectural design principles; 4.3.A

B determine building code and zoning requirements for building types in a selected area; and 4.3.B

C demonstrate knowledge of the various grades and types of construction materials. 4.3.C

Tools, Equipment, Technologies, and Materials 5

4 The student knows the function and application of the tools, equipment, technologies, and materials used in architectural computer-aided design. The student is expected to: 5.4

A use the tools, materials, and equipment commonly employed in the field of architectural computer-aided design in a safe manner; 5.4.A

B handle and dispose of environmentally hazardous materials used in the field of architecture in accordance with the material safety data sheet (MSDS), the Occupational Safety and Health Administration (OSHA), and the Environmental Protection Agency (EPA) regulations; and 5.4.B

C demonstrate knowledge of new and emerging technologies that may affect the field of architecture. 5.4.C

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History and Culture 6

10 The student demonstrates an understanding of architectural history and culture as records of human achievement by examining the connections between twentieth and twenty-first century architecture and art and connections between Greek and Roman architecture and art. The student is expected to: 6.10

- A compare and contrast historical and contemporary styles by identifying general themes and trends; 6.10.A
- B describe general characteristics in architectural artworks from a variety of cultures; and 6.10.B
- C compare and contrast career opportunities in architecture. 6.10.C

Simulations I 7

5 The student applies the concepts and skills of the trade to simulated and actual work situations. The student is expected to: 7.5

- A use problem-solving skills to analyze a situation to identify a problem to be solved; 7.5.A
- B break a complex problem into component parts that can be analyzed and solved separately; 7.5.B
- C strive for accuracy and precision; 7.5.C
- D work independently; 7.5.D
- E work collaboratively; 7.5.E
- F research an architectural project; 7.5.F
- G design and present an effective architectural product; 7.5.G
- H present a final architectural product for critique; 7.5.H
- I apply architectural lettering techniques; 7.5.I
- J develop preliminary sketches of a residential plan or nonresidential plan; 7.5.J
- K demonstrate through drawings the development of maximum efficiency of circulation within areas or rooms; 7.5.K
- L develop a site plan using maximum orientation of the building relative to views, sun, and wind direction; 7.5.L
- M draw building designs and styles to ensure compatibility between interior and exterior to enhance overall appearance; 7.5.M
- N draw schematic site plans, floor plans, roof plans, building elevations, sections, perspectives, and character sketches using design development techniques; 7.5.N
- O draw scaled wall thickness plans, interior elevations, and sections; 7.5.O
- P develop details, sections, floor and wall sections, ceiling and roof sections, door and window sections, and other sections as required; 7.5.P
- Q assemble an architectural design in three dimensions; 7.5.Q
- R research the Green Building Rating System as defined by the U.S. Green Building Council; and 7.5.R

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S create a project demonstrating sustainable design as it relates to architectural design as defined by the U.S. Green Building Council. 7.5.S

Simulations II 8

6 The student applies the concepts and skills of the trade to simulated and actual work situations. The student is expected to: 8.6

A customize screen menus to fit specific problems or needs; 8.6.A

B construct architectural drawings using advanced computer-aided design drafting skills; 8.6.B

C create two- or three-point perspectives; 8.6.C

D create three-dimensional solid models; 8.6.D

E view three-dimensional objects in several different positions; 8.6.E

F use a computer system to create a bill of materials; 8.6.F

G use a computer-aided drafting system to create and modify nonresidential or residential architectural drawings; 8.6.G

H plot architectural drawings for presentation; and 8.6.H

I render three-dimensional objects with applied materials. 8.6.I

Explore, Develop, and Organize Ideas 9

8 The student sustains exploration, development, and organization of ideas from their surroundings. The student is expected to: 9.8

A use advanced skills to illustrate ideas for architectural projects from direct observation, experiences, and imagination; and 9.8.A

B use advanced skills comparing and contrasting the use of architectural elements such as color, texture, form, line, space, and value and architectural principles such as emphasis, pattern, rhythm, balance, proportion, and unity in personal architectural projects and those of others using vocabulary accurately. 9.8.B

Media Applications 10

9 The student uses advanced skills expressing ideas through original architectural projects using a variety of media with appropriate skill. The student is expected to: 10.9

A create, using advanced skills, visual solutions by elaborating on direct observation, experiences, and imagination; 10.9.A

B create, using advanced skills, designs for practical applications; and 10.9.B

C demonstrate, using advanced skills, effective use of architectural media and tools in design, drawing, painting, printmaking, and sculpture such as advanced model building. 10.9.C

Architectural Projects 11

11 The student makes advanced, informed judgments about personal architectural projects and the architectural projects of others. The student is expected to: 11.11

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A interpret, evaluate, and justify architectural artistic decisions in personal architectural artworks; and 11.11.A

B select and analyze original architectural artworks, portfolios, and exhibitions by peers and others to form precise conclusions about formal qualities, historical and cultural contexts, intents, and meanings. 11.11.B