Texas CTE: Architecture and Construction

Architectural Design I (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

Career Planning 2

10 The student makes informed career decisions that reflect career goals. The student is expected to: 2.10

- A determine employment and entrepreneurial opportunities and preparation requirements in architecture and related fields; 2.10.A
- B propose short-term and long-term career goals; 2.10.B
- C describe technology used in architectural careers; 2.10.C
- D maintain a project portfolio that documents experience by using graphic or written documentation of architectural-related projects; and 2.10.D
- E develop a professional resume. 2.10.E

Cognitive Skills and Academic Behaviors 3

2 The student applies key cognitive skills and academic behaviors to the requirements of architectural studies. The student is expected to: 3.2

- A self-monitor learning needs and seek assistance when needed; 3.2.A
- B practice study habits necessary to manage academic pursuits and requirements; 3.2.B
- C strive for accuracy and precision; 3.2.C
- D complete and master tasks; 3.2.D
- E demonstrate effective verbal and written communication skills with individuals from varied cultures, including fellow workers, managers, and customers; 3.2.E
- F complete work orders and related paperwork; 3.2.F
- G estimate jobs, schedules, and practices related to legal restrictions; 3.2.G

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

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

History and Culture 4

8 The student demonstrates an understanding of architectural history and culture as records of human achievement from ancient Egypt to the present. The student is expected to: 4.8

A compare and contrast historical and contemporary styles, identifying general themes and trends; 4.8.A

B describe general characteristics in architectural projects from a variety of cultures; and 4.8.B

C compare and contrast career opportunities in architecture. 4.8.C

Technical Knowledge 5

3 The student knows the concepts and skills that form the technical knowledge of architectural design. The student is expected to: 5.3

A demonstrate knowledge of architectural design principles; 5.3.A

B determine building code and zoning requirements for building types in a selected area; and 5.3.B

C demonstrate knowledge of the various grades and types of construction materials. 5.3.C

Tools, Equipment, Technologies, and Materials 6

4 The student knows the function and application of the tools, equipment, technologies, and materials used in architectural drawing. The student is expected to: 6.4

A use the tools, materials, and equipment commonly employed in the field of architecture in a safe manner; 6.4.A

B handle and dispose of environmentally hazardous materials; and 6.4.B

C demonstrate knowledge of new and emerging technologies that may affect the field of architecture. 6.4.C

Application of Concepts and Skills 7

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

A use problem-solving skills to analyze a situation and 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

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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 nonresidential or residential architectural design; 7.5.J

K use traditional technical architectural drafting techniques to create drawings; 7.5.K

L demonstrate through drawings the development of maximum efficiency of circulation within areas or rooms; 7.5.L

M develop a site plan using maximum orientation of the building relative to views, sun, and wind direction; 7.5.M

N develop building designs to ensure compatibility between interior and exterior to enhance overall appearance; 7.5.N

O draw schematic site plans, floor plans, building elevations, sections, perspectives, and character sketches from bubble diagrams; 7.5.O

P draw scaled wall thickness plans, elevations, and sections; 7.5.P

Q develop details of floor and wall sections as required; 7.5.Q

R demonstrate knowledge of the Americans with Disabilities Act; 7.5.R

S assemble an architectural design in three dimensions; 7.5.S

T customize screen menus to fit specific problems or needs; 7.5.T

U construct points, lines, and other geometric forms using accepted computer-aided design methods; 7.5.U

V create a freehand simple one-point perspective; 7.5.V

W use a computer system to create a bill of materials; 7.5.W

X use a computer system to create and modify architectural drawings; and 7.5.X

Y plot architectural drawings for presentation. 7.5.Y

Explore, Develop, and Organize Ideas 8

6 **The student begins exploration, development, and organization of ideas from the surroundings. The student is expected to:** 8.6

A begin illustrating ideas for architectural projects from direct observation, experiences, imagination; and 8.6.A

B begin comparing and contrasting the use of architectural elements such as color, texture, form, line, space, value, and architectural principles such as emphasis, pattern, rhythm, balance, proportion, and unity in personal architectural projects and those of others using vocabulary accurately. 8.6.B

Media and Tools for De

7 **The student begins expressing ideas through original architectural projects using variety of media with appropriate skill. The student is expected to:** 9.7

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A create beginning visual solutions by elaborating on direct observation, experiences, and imagination; 9.7.A

B create beginning designs for practical applications; and 9.7.B

C demonstrate beginning effective use of architectural media and tools in design, drawing, painting, printmaking, and sculpture such as model building. 9.7.C

Architectural Projects 10

9 The student makes beginning informed judgments about personal architectural projects and the architectural projects of others. The student is expected to: 10.9

A interpret, evaluate, and justify architectural artistic decisions in personal architectural projects; and 10.9.A

B select and analyze original architectural projects, portfolios, and exhibitions by peers or others to form precise conclusions about formal qualities, historical and cultural contexts, intents, and meanings. 10.9.B

Application of Academic Skill to Architectural Projects 11

11 The student applies communication, science, and mathematics knowledge and skills to architectural projects. The student is expected to: 11.11

A prepare professional communications, technical reports, and presentations; 11.11.A

B apply mathematical equations; and 11.11.B

C apply scientific principles and concepts. 11.11.C

Sustainability 12

12 The student knows the concept of sustainability. The student is expected to: 12.12

A identify the nature of energy; 12.12.A

B relate potential energy, kinetic energy, and heat energy to conservation; 12.12.B

C create an energy model; 12.12.C

D evaluate different methods of energy transfer; 12.12.D

E recognize sustainable design as it relates to architectural design; and 12.12.E

F define green architecture as related to the field of architecture. 12.12.F