Texas CTE: Architecture and Construction

Principles of Architecture (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, for careers in the architecture and construction cluster; 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

27 The student examines the organization and structure of various segments of the industry to prepare for career advancement. The student is expected to: 2.26

- A recognize segments of the construction industry and show the relationships to specialty areas; 2.26.A
- B obtain necessary knowledge and skills to enhance employability; 2.26.B
- C research local and regional labor markets and job growth information to project potential for advancement; 2.26.C
- D identify sources of career information; 2.26.D
- E identify job opportunities for the trade; 2.26.E
- F identify organizations that offer career and job placement; 2.26.F
- G analyze potential growth of identified careers; 2.26.G
- H apply labor market and job growth information to career goals; 2.26.H
- I examine licensing, certification, and credentialing requirements at the national, state, and local levels to achieve compliance; 2.26.I
- J align licensing, certification, and credentialing requirements to career goals in order to plan for career advancement; 2.26.J
- K use technologies and resources to research licensing, certification, and credentialing; 2.26.K

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L evaluate and select suitable sources of licensing, certification, and credentialing; 2.26.L

M identify licenses, certifications, and credentials applicable to career goals; and 2.26.M

N document sources and agencies for licensing and certification and credentialing information, including contact information. 2.26.N

28 The student initiates and maintains a career portfolio to document knowledge, skills, and abilities. The student is expected to: 2.26

A select education, work history, and skills to create a personal resume; 2.26.A

B develop a resume using word processing technology; 2.26.B

C contact professional references to acquire recommendations; 2.26.C

D obtain appropriate letters of recommendation; and 2.26.D

E document and maintain a record of work experiences, licenses, certifications, credentials, and education and training to build a portfolio. 2.26.E

The student recognizes requirements for career advancement to plan for continuing education and training. The student is expected to: 2.26.26

26 The student recognizes requirements for career advancement to plan for continuing education and training. The student is expected to: 2.26.26

identify opportunities for career advancement to formulate career goals; 2.26.A

A identify opportunities for career advancement to formulate career goals; 2.26.A

identify a career ladder; 2.26.B

B identify a career ladder; 2.26.B

develop a career advancement plan; 2.26.C

C develop a career advancement plan; 2.26.C

review progress of a career advancement plan; 2.26.D

D review progress of a career advancement plan; 2.26.D

maintain positive interpersonal skills to en po

E maintain positive interpersonal skills to enhance advancement potential; 2.26.E

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explore education and training opportunities to acquire skills necessary for career advancement; 2.26.F	**F explore education and training opportunities to acquire skills necessary for career advancement;** 2.26.F
list postsecondary educational paths associated with the architecture and construction trades, including college, apprenticeship, and specialty trade schools; 2.26.G	**G list postsecondary educational paths associated with the architecture and construction trades, including college, apprenticeship, and specialty trade schools;** 2.26.G
explore costs associated with postsecondary education; 2.26.H	**H explore costs associated with postsecondary education;** 2.26.H
participate in professional development opportunities such as professional organizations and associations, trade shows, and seminars; 2.26.I	**I participate in professional development opportunities such as professional organizations and associations, trade shows, and seminars;** 2.26.I
read professional journals, magazines, manufacturers' catalogs, industry publications, and Internet sites to keep current on industry trends; and 2.26.J	**J read professional journals, magazines, manufacturers' catalogs, industry publications, and Internet sites to keep current on industry trends; and** 2.26.J
identify declining and emerging occupations, practices, and procedures. 2.26.K	**K identify declining and emerging occupations, practices, and procedures.** 2.26.K
Mathematical Skills 3	**2 The student performs mathematical operations to complete tasks such as measuring and estimating materials and supplies. The student is expected to:** 3.2
	A determine areas and volumes of various structures and estimate materials and supplies using appropriate geometric formulas and calculations; 3.2.A

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B determine percentages and decimals and use percentages and decimals to perform measurement tasks using appropriate formulas and calculations; 3.2.B

C determine ratios, fractions, and proportions using appropriate formulas and calculations; 3.2.C

D perform measurement tasks using ratios, fractions, and proportions; and 3.2.D

E estimate materials and supplies using dimensions, spaces, and structures calculations. 3.2.E

Physics Skills 4

3 The student uses physics skills to work with materials and load applications. The student is expected to: 4.3

A apply basic concepts of static and loads to planning; and 4.3.A

B identify the physical properties present when using common construction materials in order to use the materials safely, effectively, and efficiently. 4.3.B

Chemical Materials 5

4 The student manages chemical materials safely. The student is expected to: 5.4

A recognize the issues present when mixing compatible and incompatible substances to maintain workplace and jobsite safety; 5.4.A

B differentiate between incompatible and compatible substances; 5.4.B

C describe the chemical process that occurs when using common construction materials to maintain workplace and jobsite safety; and 5.4.C

D apply chemical processes in relation to environmental conditions. 5.4.D

Communication Skills 6

5 The student reads, comprehends, and communicates effectively in the workplace, using proper grammar and workplace terminology when using printed, written, and electronic media. The student is expected to: 6.5

A use technological applications to transmit reports; 6.5.A

B develop written communications such as estimates, work orders, and memos; 6.5.B

C read and follow technical instructions and manuals; 6.5.C

D compose an accurate and organized diary or log of work; and 6.5.D

E write reports and documents such as estimates, permits, memos, and technical reports. 6.5.E

Listening Skills 7

6 The student listens attentively and speaks clearly to convey information correctly. The student is expected to: 7.6

A confirm understanding of verbal and visual instructions; and 7.6.A

B ask relevant questions concerning details of instructions. 7.6.B

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'he student listens to and speaks clearly with a variety of individuals to enhance ommunications skills. The student is expected to: 7.6

A provide verbal instructions; and 7.6.A

B listen attentively to spoken messages to respond to information. 7.6.B

Public Relations Skills 8

8 The student exhibits public relations skills to address a variety of situations such as increasing internal and external customer and client satisfaction. The student is expected to: 8.8

A communicate effectively to develop positive customer and client relationships; 8.8.A

B develop and maintain customer relations; 8.8.B

C define customer and client satisfaction; and 8.8.C

D evaluate customer and client satisfaction. 8.8.D

Technological Applications 9

12 The student uses technological applications specific to architecture and construction to access, manage, integrate, and create information. The student is expected to: 9.12

A manage personal and professional schedules and contact information; 9.12.A

B manage daily, weekly, and monthly schedules using an application; and 9.12.B

C create memos and notes. 9.12.C

Electronic Devices to Communicate 10

13 The student uses electronic devices to communicate. The student is expected to: 10.13

A access an electronic system using login and password functions; 10.13.A

B access electronic messages received; 10.13.B

C create electronic messages in accordance with established business standards such as grammar, word usage, spelling, sentence structure, clarity, and etiquette; 10.13.C

D practice appropriate electronic message etiquette; 10.13.D

E send electronic messages; 10.13.E

F use electronic devices to share files and documents; 10.13.F

G access electronic devices for attachments; 10.13.G

H attach documents to electronic messages; and 10.13.H

I save electronic messages and attachments. 10.13.I

Writing and Publishing Applications 11

14 The student uses writing and publishing applications. The student is expected to: 11.14

A prepare simple documents and other business communications; 11.14.A

B retrieve existing documents; 11.14.B

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C create documents such as letters, memos, and reports using existing forms and templates; 11.14.C

D safeguard documents using name and save functions; 11.14.D

E format text using basic formatting functions; and 11.14.E

F employ word processing utility tools such as spell check, grammar check, and thesaurus. 11.14.F

Spreadsheet Applications 12

15 The student uses spreadsheet applications. The student is expected to: 12.15

A create, retrieve, edit, save, and print spreadsheets; 12.15.A

B perform calculations and analysis on data; 12.15.B

C group worksheets; 12.15.C

D create charts and graphs from a spreadsheet; 12.15.D

E perform calculations using simple formulas; and 12.15.E

F input and process data using spreadsheet functions. 12.15.F

Database Applications 13

16 The student uses database applications. The student is expected to: 13.16

A manipulate data elements; 13.16.A

B enter data using a form; 13.16.B

C locate and replace data using search and replace functions; and 13.16.C

D process data using database functions such as structure, format, attributes, and relationships. 13.16.D

Collaborative Applications 14

17 The student uses collaborative applications. The student is expected to: 14.17

A facilitate group work through management of shared schedules and contact information; 14.17.A

B manage daily, weekly, and monthly schedules using an application; and 14.17.B

C maintain a shared database of contact information. 14.17.C

Governmental Regulations and Codes 15

18 The student complies with governmental regulations and applicable codes to establish a legal and safe environment. The student is expected to: 15.18

A identify occupation-specific governmental regulations and national, state, and local building codes to establish appropriate regulations and codes; 15.18.A

B comply with governmental regulations and building codes; 15.18.B

C read and discuss information on Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), and other safety regulations; and 15.18.C

D read and discuss Safety Data Sheet (SDS) information to manage and dispose of hazardous materials. 15.18.D

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Do

The student reads technical drawings and documents to plan a project. The student is expected to: 16.29

A interpret blueprints and drawings to assist with project planning; 16.29.A

B recognize elements and symbols of blueprints and drawings; 16.29.B

C relate information on blueprints to actual locations on the print; 16.29.C

D recognize different classifications of drawings; and 16.29.D

E interpret and use drawing dimensions. 16.29.E

Maintain Tools, Machines, and Equipment 17

30 The student uses and maintains appropriate tools, machines, and equipment to accomplish project goals. The student is expected to: 17.30

A select tools, machinery, and equipment to match requirements of the project; 17.30.A

B safely operate tools, machinery, and equipment; 17.30.B

C maintain and care for tools, machines, and equipment; 17.30.C

D use tools, machines, and equipment productively and efficiently in alignment with industry standards; 17.30.D

E identify sources of information concerning state-of-the-art tools, equipment, materials, technologies, and methodologies; 17.30.E

F read current periodicals, industry publications, and manufacturers' catalogs; and 17.30.F

G explore state-of-the-art tools, equipment, materials, technologies, and methodologies. 17.30.G

Built Environment and Systems 18

19 The student examines all aspects of the built environment and systems to complete project planning. The student is expected to: 18.19

A align and incorporate the built environment and its systems to complete the project; 18.19.A

B label all systems on a set of construction documents; 18.19.B

C discuss the interrelationship of the systems in the built environment; and 18.19.C

D use a sequential method such as the critical path method so that work progresses efficiently. 18.19.D

Industry Standards and Practices 19

20 The student applies industry standards and practices to ensure quality work. The student is expected to: 19.20

A identify current industry standards and practices in order to incorporate quality into projects; 19.20.A

B document how quality improves profitability; 19.20.B

C report on issues that affect quality; 19.20.C

D use industry standards and practices to enhance appreciation for quality workmanship; and 19.20.D

E perform work that meets or exceeds the quality standards of the industry. 19.20.E

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Health and Safety Standards 20

21 The student observes rules and regulations to comply with personal and occupational health and safety standards. The student is expected to: 20.21

- A follow appropriate safety standards to ensure a safe environment; 20.21.A
- B practice safety rules and regulations; 20.21.B
- C identify safety precautions and hazards to ensure a safe environment; and 20.21.C
- D use appropriate safety practices and equipment, including personal protective equipment. 20.21.D

Teamwork 21

22 The student works as an individual and as a team member to accomplish assignments. The student is expected to: 21.22

- A use human relations skills to work cooperatively with coworkers representing different cultures, genders, and backgrounds; 21.22.A
- B track team goals to contribute constructively and positively to the team; 21.22.B
- C match team members to appropriate activities; 21.22.C
- D manage skills to effectively accomplish assignments; 21.22.D
- E effectively use conflict-resolution skills with coworkers to maintain a smooth workflow; and 21.22.E
- F use mentoring skills to inspire and motivate others to achieve and enhance performance. 21.22.F

Personal Accountability 22

23 The student exhibits personal accountability, integrity, and responsibility to enhance confidence among coworkers. The student is expected to: 22.23

- A apply the professional and ethical standards of the industry to personal conduct; 22.23.A
- B practice professional and ethical standards; 22.23.B
- C maintain personal integrity; 22.23.C
- D promote personal and professional integrity in coworkers; and 22.23.D
- E recognize integrity in others. 22.23.E

Regulations and Contracts 23

24 The student reads regulations and contracts to ensure ethical and safety elements are observed. The student is expected to: 23.24

- A study regulations and codes to identify those applicable to the local area; 23.24.A
- B locate and implement regulations and codes applicable to tasks and projects; 23.24.B
- C comply with local, state, and federal agencies and model code-setting organizations; 23.24.C
- D recognize the definition of specialized words or phrases to fully understand documents and contracts; 23.24.D

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E use industry jargon or terminology appropriately; 23.24.E

F use industry acronyms correctly; 23.24.F

G use words with multiple meanings correctly in context; and 23.24.G

H use ethical and legal standards to avoid conflicts of interest. 23.24.H

Work Ethic 24

25 The student recognizes a positive work ethic to comply with employment requirements. The student is expected to: 24.25

A exhibit behaviors showing reliability and dependability; 24.25.A

B recognize appropriate dress for the work environment; and 24.25.B

C recognize the required employment forms and documentation such as I-9, work visa, W-4, and licensures to meet employment requirements. 24.25.C

Project Planning 25

9 The student identifies the relationship between available resources and requirements of a project to accomplish realistic planning. The student is expected to: 25.9

A initiate a project, including identifying resources and materials and time-management, labor-management, job-management, and job-site obligations in order to effectively plan; 25.9.A

B plan a project, including estimating correct amounts of required resources and materials and identifying risks; 25.9.B

C evaluate the feasibility of alternative suggestions; 25.9.C

D execute, monitor, and control a project using available resources and materials effectively; and 25.9.D

E close a project, including identifying lessons learned and evaluating waste of resources and materials. 25.9.E

Evaluation of Project 26

10 The student evaluates and adjusts plans and schedules to respond to unexpected events and conditions. The student is expected to: 26.10

A incorporate potential job disruptions into planning timelines; 26.10.A

B identify potential events and conditions that disrupt the completion of a job; 26.10.B

C solve situational problems involved with unexpected events and conditions; 26.10.C

D adjust plans and schedules to meet project needs; 26.10.D

E modify existing plans and schedules to reflect an unexpected change; 26.10.E

F identify and assess critical situations as they arise to resolve issues with the best solution; and 26.10.F

G present a project update to track changes necessitated by unexpected events and conditions. 26.10.G

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11 The student synthesizes and reports conditions to keep the organization appraised of progress and potential problems. The student is expected to: 27.11

A provide a project update for stakeholders; and 27.11.A

B present a verbal or written status report on a project. 27.11.B