

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
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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

- 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 enhance advancement potential; 2.26.E

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

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

- 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
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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
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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
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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
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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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7 The student listens to and speaks clearly with a variety of individuals to enhance communications 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
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- 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
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- 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
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- 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
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- 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
 - 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
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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
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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
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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
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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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Technical Drawings and Documents 16

29 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
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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
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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
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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
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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
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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
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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

- 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
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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
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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
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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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Project Reports 27

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