Texas CTE: Architecture and Construction

Construction Technology II

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Introduction CTII.B

1 **Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.** CTII.B.1

2 **The Architecture and Construction Career Cluster focuses on designing, planning, managing, building, and maintaining the built environment.** CTII.B.2

3 **In Construction Technology II, students will gain advanced knowledge and skills needed to enter the workforce as carpenters, building maintenance technicians, or supervisors or to prepare for a postsecondary degree in construction management, architecture, or engineering. Students will build on the knowledge base from Construction Technology I and are introduced to exterior and interior finish out skills. For safety and liability considerations, limiting course enrollment to 15 students is recommended.** CTII.B.3

4 **Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.** CTII.B.4

5 **Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.** CTII.B.5

Knowledge and skills. CTII.C

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

- A explain the role of an employee in the construction industry; CTII.C.1.A
- B demonstrate critical-thinking skills; CTII.C.1.B
- C demonstrate the ability to solve problems using critical-thinking skills; CTII.C.1.C
- D demonstrate knowledge of basic computer systems; CTII.C.1.D
- E explain common uses for computers in the construction industry; CTII.C.1.E
- F define effective relationship skills; and CTII.C.1.F
- G recognize workplace issues such as sexual harassment, stress, and substance abuse. CTII.C.1.G

2 **The student is provided with the knowledge to interpret various types of working drawings as they pertain to commercial construction. The student is expected to:** CTII.C.2

- A recognize the difference between commercial and residential construction drawings; CTII.C.2.A
- B identify the basic keys, abbreviations, and other references contained in a set of commercial drawings; CTII.C.2.B
- C accurately read a set of commercial drawings; CTII.C.2.C
- D identify and document specific items from a door and window schedule; CTII.C.2.D
- E explain basic construction details and concepts employed in commercial construction; and CTII.C.2.E
- F calculate the floor area of each room in a floor plan. CTII.C.2.F

3 **The student selects and installs common roofing materials for residential and light commercial projects. The student is expected to:** CTII.C.3

- A identify the materials and methods used in roofing; CTII.C.3.A
- B explain the safety requirements for roof jobs; CTII.C.3.B
- C install fiberglass shingles on gable and hip roofs; CTII.C.3.C
- D close up a valley using fiberglass shingles; CTII.C.3.D
- E explain how to make various roof projections watertight when using fiberglass shingles; CTII.C.3.E
- F complete the proper cuts and install the main and hip ridge caps using fiberglass shingles; CTII.C.3.F
- G lay out, cut, and install a cricket or saddle; CTII.C.3.G
- H install wood shingles and shakes on roofs; CTII.C.3.H
- I describe how to close up a valley using wood shingles and shakes; CTII.C.3.I
- J complete the cuts and install the main and hip ridge caps using wood shakes or shingles; and CTII.C.3.J
- K demonstrate the techniques for installing other selected types of roofing materials. CTII.C.3.K

4 **The student selects and installs various types of insulation in walls, floors, and attics. The student is expected to:** CTII.C.4

- A describe the requirements for insulation; CTII.C.4.A
- B describe the characteristics of various types of insulation material; CTII.C.4.B
- C calculate the required amounts of insulation for a structure; CTII.C.4.C
- D install selected insulation materials; CTII.C.4.D
- E describe the requirements for moisture control and ventilation; CTII.C.4.E
- F install selected vapor barriers; CTII.C.4.F
- G describe various methods of waterproofing; CTII.C.4.G
- H describe air infiltration control requirements; and CTII.C.4.H
- I install selected building wraps. CTII.C.4.I

5 **The student learns the processes to install various exterior siding materials. The student is expected to:** CTII.C.5

- A describe the purpose of wall insulation and flashing; CTII.C.5.A
- B install selected common cornices; CTII.C.5.B
- C demonstrate lap and panel siding estimating methods; CTII.C.5.C
- D describe the types and applications of common wood siding; CTII.C.5.D
- E describe fiber-cement siding and its uses; CTII.C.5.E
- F describe the types and styles of vinyl and metal siding; CTII.C.5.F
- G describe the types and applications of stucco and masonry veneer finishes; and CTII.C.5.G
- H install three types of siding commonly used in the local area. CTII.C.5.H

6 **The student knows the types and grades of steel framing materials and the process for installing metal framing for interior walls, exterior nonbearing walls, and partitions. The student is expected to:** CTII.C.6

- A identify the components of a steel framing system; CTII.C.6.A
- B identify and select the tools and fasteners used in a steel framing system; CTII.C.6.B
- C identify applications for steel framing systems; CTII.C.6.C
- D demonstrate the ability to build back-to-back, box, and L-headers; CTII.C.6.D
- E layout and install a steel stud structural wall with openings to include bracing and blocking; and CTII.C.6.E
- F layout and install a steel-stud, non-structural wall with openings to include bracing and blocking. CTII.C.6.F

7 **The student knows various types of gypsum drywall and their uses and the fastening devices and methods used to install them. The student is expect to:** CTII.C.7

- A identify the different types of drywall and their uses; CTII.C.7.A
- B select the type and thickness of drywall required for specific installations; CTII.C.7.B
- C select fasteners for drywall installations; CTII.C.7.C
- D explain the fastener schedules for different types of drywall installations; CTII.C.7.D
- E perform single-layer and multi-layer drywall installations using different types of fastening systems, including nails, drywall screws, and adhesives; CTII.C.7.E
- F install gypsum drywall on steel studs; CTII.C.7.F
- G explain how soundproofing is achieved in drywall installations; and CTII.C.7.G
- H estimate material quantities for a drywall installation. CTII.C.7.H

8 **The student knows the materials, tools, and methods used to finish and patch gypsum drywall. The student is expected to:** CTII.C.8

- A state the differences between the six levels of finish established by industry standards and distinguish between finish levels by observation; CTII.C.8.A
- B identify the hand tools used in drywall finishing and demonstrate the ability to use these tools; CTII.C.8.B
- C identify the automatic tools used in drywall finishing; CTII.C.8.C
- D identify the materials used in drywall finishing and state the purpose and use of each type of material, including compounds, joint reinforcing tapes, trim materials, textures, and coatings; CTII.C.8.D
- E finish drywall using hand tools; CTII.C.8.E
- F recognize various types of problems that occur in drywall finishes and identify their causes; CTII.C.8.F
- G identify the correct methods for solving each type of problem that occurs in drywall finishes; and CTII.C.8.G
- H patch damaged drywall. CTII.C.8.H

9 **The student installs metal doors and related hardware in steel-framed, wood-framed, and masonry walls. The student is expected to:** CTII.C.9

- A identify various types of door jambs and frames; CTII.C.9.A
- B demonstrate the installation procedures for placing door jambs and frames in different types of interior partitions; CTII.C.9.B
- C identify different types of interior doors; CTII.C.9.C
- D identify different types of interior door hardware and demonstrate the installation procedures for them; CTII.C.9.D
- E list and identify items included on a typical door schedule; and CTII.C.9.E
- F demonstrate the procedure for placing and hanging a door. CTII.C.9.F

10 **The student gains knowledge of the materials, layout, and installation of various types of suspended ceilings used in commercial construction as well as ceiling tiles, drywall suspension systems, and pan-type ceilings. The student is expected to:** CTII.C.10

- A establish a level line; CTII.C.10.A
- B explain the common terms related to sound waves and acoustical ceiling materials; CTII.C.10.B
- C identify the different types of suspended ceilings; CTII.C.10.C
- D interpret plans related to ceiling layout; CTII.C.10.D
- E sketch the ceiling layout for a basic suspended ceiling; and CTII.C.10.E
- F install selected suspended ceilings. CTII.C.10.F

11 The student knows the types of trim used in finish work. The student is expected to: CTII.C.11

- A identify the different types of standard moldings and describe their uses; CTII.C.11.A
- B make square and miter cuts using a miter box or power miter saw; CTII.C.11.B
- C make coped joint cuts using a coping saw; CTII.C.11.C
- D select and use fasteners to install trim, including door trim, window trim, base trim, and ceiling trim; and CTII.C.11.D
- E estimate the quantities of different trim materials required for selected rooms. CTII.C.11.E

12 The student selects and installs base and wall cabinets and countertops. The student is expected to: CTII.C.12

- A state the classes and sizes of typical base and wall kitchen cabinets; CTII.C.12.A
- B identify cabinet components and hardware and describe their purposes; CTII.C.12.B
- C lay out factory-made cabinets, countertops, and backsplashes; CTII.C.12.C
- D explain the installation of an island base; CTII.C.12.D
- E recognize the common types of woods used to make cabinets; CTII.C.12.E
- F identify and cut the various types of joints used in cabinetmaking; CTII.C.12.F
- G build a cabinet from a set of drawings; and CTII.C.12.G
- H install plastic laminate on a countertop core. CTII.C.12.H