

# Construction Technology I

## At-A-Glance - Lamar CISD

Professional Standards/Employability Skills/Technical Skills			
<b>Ongoing Skills Imbedded All Year</b>	<p><b>Safety</b></p> <p>CT I 2(A) The student will explain the idea of a safety culture.            CT I 2(B) The student will explain the importance of a safety culture in the construction crafts.            CT I 2(C) The student will explain the role of Occupational Safety and Health Administration (OSHA) in job-site safety.            CT I 2(D) The student will explain fall protection, ladder safety, stair safety, and scaffold safety procedures.            CT I 2(E) The student will explain the importance of hazard communication (HazCom).            CT I 2(F) The student will explain the importance of Safety Data Sheets (SDS).            CT I 2(G) The student will explain OSHA's General Duty Clause.            CT I 2(H) The student will explain OSHA 1926 CFR Subpart C.            CT I 2(I) The student will identify causes of accidents.            CT I 2(J) The student will identify impacts of accident costs.            CT I 2(K) The student will identify struck-by hazards.            CT I 2(L) The student will identify caught-in-between hazards.            CT I 2(M) The student will identify other construction hazards on the jobsite, including hazardous material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires.            CT I 2(N) The student will define safe work procedures around electrical hazards.            CT I 2(O) The student will define hazard recognition.            CT I 2(P) The student will define risk assessment techniques.            CT I 2(Q) The student will demonstrate the use and care of appropriate personal protective equipment, including safety goggles and glasses, hard hats, gloves, safety harnesses, and safety shoes.</p> <p><b>Hand Tools</b></p> <p>CT I 5(A) The student will identify the hand tools commonly used by carpenters and describe their uses.            CT I 5(B) The student will use hand tools in a safe and appropriate manner.</p> <p><b>Power Tools</b></p> <p>CT I 5(C) The student will state the general safety rules for operating all power tools regardless of type.</p>		
	Grading Period	Unit Name	Estimated Time Frame
<b>Grading Period 1 28 Days</b>	<b>Career and Employability Skills</b>	<b>5 Days</b>	3A, 3B, 1A, 1B, 1C, 1D, 1E, 1F, 1G
	<p>CT I 3(A) The student will identify job opportunities and their accompanying job duties such as carpentry, building maintenance supervisor, architect, and engineer.            CT I 3(B) The student will research careers along with the education, job skills, and experience required to achieve them.            CT I 1(A) The student will explain the role of an employee in the construction industry.            CT I 1(B) The student will apply critical-thinking skills.            CT I 1(C) The student will demonstrate the ability to solve problems using critical-thinking skills.            CT I 1(D) The student will demonstrate knowledge of basic computer systems.            CT I 1(E) The student will explain common uses for computers in the construction industry.            CT I 1(F) The student will define effective relationship skills.            CT I 1(G) The student will recognize workplace issues such as sexual harassment, stress, and substance abuse.</p>		
	<b>Safety</b>	<b>8 Days</b>	2A, 2B, 2C, 2D, 2E, 2F, 2G, 2H, 2I, 2J, 2K, 2L, 2M, 2N, 2O, 2P, 2Q
<p>CT I 2(A) The student will explain the idea of a safety culture.            CT I 2(B) The student will explain the importance of a safety culture in the construction crafts.            CT I 2(C) The student will explain the role of Occupational Safety and Health Administration (OSHA) in job-site safety.            CT I 2(D) The student will explain fall protection, ladder safety, stair safety, and scaffold safety procedures.            CT I 2(E) The student will explain the importance of hazard communication (HazCom).            CT I 2(F) The student will explain the importance of Safety Data Sheets (SDS).            CT I 2(G) The student will explain OSHA's General Duty Clause.            CT I 2(H) The student will explain OSHA 1926 CFR Subpart C.            CT I 2(I) The student will identify causes of accidents.            CT I 2(J) The student will identify impacts of accident costs.            CT I 2(K) The student will identify struck-by hazards.            CT I 2(L) The student will identify caught-in-between hazards.            CT I 2(M) The student will identify other construction hazards on the jobsite, including hazardous material exposures, environmental elements, welding and cutting hazards, confined spaces, and fires.            CT I 2(N) The student will define safe work procedures around electrical hazards.            CT I 2(O) The student will define hazard recognition.            CT I 2(P) The student will define risk assessment techniques.            CT I 2(Q) The student will demonstrate the use and care of appropriate personal protective equipment, including safety goggles and glasses, hard hats, gloves, safety harnesses, and safety shoes.</p>			

	<b>Blueprints and Symbols</b>	<b>15 Days</b>	6A, 6B, 6C, 6D, 6E, 6F,6G,6H, 6I
	<p>CT I 6(A) The student will describe the types of drawings usually included in a set of plans and list the information found on each type.</p> <p>CT I 6(B) The student will identify the different types of lines used on construction drawings.</p> <p>CT I 6(C) The student will identify selected architectural symbols commonly used to represent materials on plans.</p> <p>CT I 6(D) The student will identify selected electrical, mechanical, and plumbing symbols commonly used on plans.</p> <p>CT I 6(E) The student will identify selected abbreviations commonly used on plans.</p> <p>CT I 6(F) The student will read and interpret plans, elevations, schedules, sections, and details contained in basic construction drawings.</p> <p>CT I 6(G) The student will state the purpose of written specifications.</p> <p>CT I 6(H) The student will identify and describe the parts of a specification.</p> <p>CT I 6(I) The student will demonstrate or describe how to perform a quantity takeoff for materials.</p>		
<b>Grading Period 2 25 Days</b>	<b>Hand Tools</b>	<b>12 Days</b>	5A, 5B
	<p>CT I 5(A) The student will identify the hand tools commonly used by carpenters and describe their uses.</p> <p>CT I 5(B) The student will use hand tools in a safe and appropriate manner.</p>		
	<b>Power Tools</b>	<b>13 Days</b>	5C, 5D, 5E
	<p>CT I 5(C) The student will state the general safety rules for operating all power tools regardless of type.</p> <p>CT I 5(D) The student will identify the portable power tools commonly used by carpenters and describe their uses.</p> <p>CT I 5(E) The student will use portable power tools in a safe and appropriate manner.</p>		
<b>Grading Period 3 25 Days</b>	<b>Building Materials</b>	<b>7 Days</b>	4A, 4B, 4C, 4D, 4E, 4F, 4G
	<p>CT I 4(A) The student will identify various types of building materials and their uses.</p> <p>CT I 4(B) The student will state the uses of various types of hardwoods and softwoods</p> <p>CT I 4(C) The student will identify the different grades and markings of wood building materials.</p> <p>CT I 4(D) The student will describe the proper method of storing and handling building materials.</p> <p>CT I 4(E) The student will state the uses of various types of engineered lumber.</p> <p>CT I 4(F) The student will calculate the quantities of lumber and wood products using industry-standard methods.</p> <p>CT I 4(G) The student will describe the fasteners, anchors, and adhesives used in construction work and explain their uses.</p>		
	<b>Concrete</b>	<b>8 Days</b>	10A, 10B, 10C, 10D, 10E, 10F, 10G, 10H
	<p>CT I 10(A) The student will identify the properties of cement.</p> <p>CT I 10(B) The student will describe the composition of concrete.</p> <p>CT I 10(C) The student will perform volume estimates for concrete.</p> <p>CT I 10(D) The student will identify types of concrete reinforcement materials and describe their uses.</p> <p>CT I 10(E) The student will identify various types of footings and explain their uses.</p> <p>CT I 10(F) The student will identify the parts of various types of concrete forms.</p> <p>CT I 10(G) The student will explain the safety procedures associated with the construction and use of concrete forms.</p> <p>CT I 10(H) The student will erect, plumb, and brace a simple concrete form with reinforcement.</p>		
	<b>Stairs</b>	<b>10 Days</b>	12A, 12B, 12C, 12D, 12E, 12F, 12G
<p>CT I 12(A) The student will identify the various types of stairs.</p> <p>CT I 12(B) The student will identify the various parts of stairs.</p> <p>CT I 12(C) The student will identify the materials used in the construction of stairs.</p> <p>CT I 12(D) The student will interpret construction drawings of stairs.</p> <p>CT I 12(E) The student will calculate the total rise, number and size of riser, and the number and size of treads required for a given stairway.</p> <p>CT I 12(F) The student will lay out and cut stringer, riser, and treads.</p> <p>CT I 12(G) The student will build a small unit with a temporary handrail.</p>			

<b>Grading Period 4 33 Days</b>	<b>Flooring Systems</b>	<b>17 Days</b>	7A, 7B, 7C, 7D, 7E, 7F, 7G, 7H, 7I, 7J, 7Ki, 7Kii, 7Kiii, 7Kiv
	<p>CT I 7(A) The student will identify the different types of framing systems.</p> <p>CT I 7(B) The student will read and interpret drawings and specifications to determine floor system requirements.</p> <p>CT I 7(C) The student will identify floor and sill framing and support members.</p> <p>CT I 7(D) The student will name the methods used to fasten sills to the foundation.</p> <p>CT I 7(D) The student will name the methods used to fasten sills to the foundation.</p> <p>CT I 7(E) The student will select the proper girder or beam size from a list of available girders or beams given specific floor load and span data.</p> <p>CT I 7(F) The student will list and recognize different types of bridging.</p> <p>CT I 7(G) The student will list and recognize different types of flooring materials.</p> <p>CT I 7(H) The student will explain the purposes of subflooring and underlayment.</p> <p>CT I 7(I) The student will select the appropriate fasteners to be used in various floor framing systems.</p> <p>CT I 7(J) The student will estimate the amount of material needed to frame a floor assembly.</p> <p>CT I 7(Ki) The student will lay out and construct a floor assembly.</p> <p>CT I 7(Kii) The student will install bridging.</p> <p>CT I 7(Kiii) The student will install joists for a cantilever-floor.</p> <p>CT I 7(Kiv) The student will install a subfloor using butt-joint plywood or oriented strand board panels.</p> <p>CT I 7(Kv) The student will install a single floor system using tongue-and-groove (T&amp;G) plywood or oriented strand board (OSB) panels.</p>		
	<b>Doors and Windows</b>	<b>16 Days</b>	11A, 11B, 11C, 11D, 11E, 11F, 11G, 11H, 11I, 11J, 11K
<p>CT I 11(A) The student will identify various types of fixed, sliding, and swinging windows.</p> <p>CT I 11(B) The student will identify the parts of a window installation.</p> <p>CT I 11(C) The student will state the requirements for proper window installation.</p> <p>CT I 11(D) The student will install a pre-hung window.</p> <p>CT I 11(E) The student will identify the common types of exterior doors and explain how they are constructed.</p> <p>CT I 11(F) The student will identify the parts of a door installation.</p> <p>CT I 11(G) The student will identify types of thresholds used with exterior doors.</p> <p>CT I 11(H) The student will install a pre-hung exterior door.</p> <p>CT I 11(I) The student will identify the various types of locksets used on exterior doors and explain how the locksets are installed.</p> <p>CT I 11(J) The student will install a lockset.</p> <p>CT I 11(K) The student will identify and explain the use and installation of various door and window hardware, including security hinges, keepers, deadbolts, and peep holes.</p>			
<b>Grading Period 5 34 Days</b>	<b>Wall Framing</b>	<b>15 Days</b>	8A, 8B, 8C, 8D, 8E, 8F, 8G, 8H, 8I
	<p>CT I 8(A) The student will identify the components of a wall and ceiling layout.</p> <p>CT I 8(B) The student will describe the procedure for laying out a wood frame wall, including the installation of plates, corner posts, door and window openings, partition Ts, bracing, and firestops.</p> <p>CT I 8(C) The student will describe the correct procedure for assembling and erecting an exterior wall.</p> <p>CT I 8(D) The student will identify the common materials and methods used for installing sheathing on walls.</p> <p>CT I 8(E) The student will lay out, assemble, erect, and brace exterior walls for a frame building.</p> <p>CT I 8(F) The student will describe wall framing techniques used in masonry construction.</p> <p>CT I 8(G) The student will explain the use of metal studs in wall framing.</p> <p>CT I 8(H) The student will cut and install ceiling joists on a wood frame building.</p> <p>CT I 8(I) The student will estimate the materials required for frame walls and ceilings.</p>		
	<b>Roofing</b>	<b>19 Days</b>	9A, 9B, 9C, 9D, 9E, 9F, 9G, 9H, 9I, 9J
<p>CT I 9(A) The student will demonstrate an understanding of the terms associated with roof framing.</p> <p>CT I 9(B) The student will identify the roof framing members used in gable and hip roofs.</p> <p>CT I 9(C) The student will identify the methods used to calculate the length of a rafter.</p> <p>CT I 9(D) The student will identify the various types of trusses used in roof framing.</p> <p>CT I 9(E) The student will use a framing square, speed square, and calculator in laying out a roof.</p> <p>CT I 9(F) The student will identify various types of sheathing used in roof construction.</p> <p>CT I 9(G) The student will frame a gable roof with vent openings.</p> <p>CT I 9(H) The student will erect a gable roof using trusses.</p> <p>CT I 9(I) The student will frame a roof opening.</p> <p>CT I 9(J) The student will estimate the materials used for framing and sheathing a roof.</p>			

**Grading  
Period 6  
28 Days**

<b>Electrical Theory</b>	<b>6 Days</b>	5A, 5B, 5C, 5D, 5E, 5F, 5G, 5H, 5I, 5J, 5K
<p>CT I 5(A) The student will recognize what atoms are and what atoms are composed of.            CT I 5(B) The student will define voltage and identify the ways in which it can be produced.            CT I 5(C) The student will explain the difference between conductors and insulators.            CT I 5(D) The student will define the units of measurement used to measure the properties of electricity.            CT I 5(E) The student will explain how voltage, current, and resistance are related to each other.            CT I 5(F) The student will calculate an unknown value using the formula for Ohm's law.            CT I 5(G) The student will explain the different types of meters used to measure voltage, current, and resistance.            CT I 5(H) The student will calculate the amount of power used by a circuit using the power formula.            CT I 5(I) The student will explain the basic characteristics of a series, parallel, and combined series-parallel circuit.            CT I 5(J) The student will calculate, using Kirchhoff's current law, the total current in parallel and series-parallel circuits.            CT I 5(K) The student will find the total amount of resistance in a series, parallel, or combined series-parallel circuit.</p>		
<b>National Electric Code</b>	<b>5 Days</b>	7A, 7B, 7C, 7D
<p>CT I 7(A) The student will explain the purpose and history of the National Electrical Code.            CT I 7(B) The student will describe the layout of and explain how to navigate the National Electrical Code.            CT I 7(C) The student will describe the purpose of the National Electrical Manufacturers Association and National Fire Protection Association.            CT I 7(D) The student will explain the role of testing laboratories.</p>		
<b>Conductors and Wiring</b>	<b>8 Days</b>	9A, 9B, 9C, 9D, 9E, 9F, 9G, 9H, 9I, 9J, 9K, 9L, 9M, 9N, 9O
<p>CT I 9(A) The student will demonstrate the various wire sizes using a wire in accordance with American Wire Gauge standards.            CT I 9(B) The student will identify insulation and jacket types according to conditions and applications.            CT I 9(C) The student will describe voltage ratings of conductors and cables.            CT I 9(D) The student will read and identify markings on conductors and cables.            CT I 9(E) The student will use the tables in the National Electrical Code to determine the ampacity of a conductor.            CT I 9(F) The student will state the purpose of stranded wire.            CT I 9(G) The student will state the purpose of compressed conductors.            CT I 9(H) The student will describe the different materials from which conductors are made.            CT I 9(I) The student will describe the different types of conductor insulation.            CT I 9(J) The student will describe the color coding of insulation.            CT I 9(K) The student will describe instrumentation control wiring.            CT I 9(L) The student will describe the equipment required for pulling wire through conduit.            CT I 9(M) The student will describe the procedure for pulling wire through conduit.            CT I 9(N) The student will install conductors in conduit.            CT I 9(O) The student will pull conductors in a conduit system.</p>		
<b>Residential Wiring</b>	<b>9 Days</b>	12A, 12B, 12C, 12D, 12E, 12F, 12G, 12H, 12I, 12J, 12K, 12L, 12M
<p>CT I 12(A) The student will identify the various types of stairs.            CT I 12(B) The student will identify the various parts of stairs.            CT I 12(C) The student will identify the materials used in the construction of stairs.            CT I 12(D) The student will interpret construction drawings of stairs.            CT I 12(E) The student will calculate the total rise, number and size of riser, and the number and size of treads required for a given stairway.            CT I 12(F) The student will lay out and cut stringer, riser, and treads.            CT I 12(G) The student will build a small unit with a temporary handrail. (H) explain the purpose of ground-fault circuit interrupters and tell where they must be installed.            CT I 12(I) The student will determine the size of outlet boxes and select the proper type for different wiring methods.            CT I 12(J) The student will describe rules for installing electric space heating and heating, ventilating, and air conditioning equipment.            CT I 12(K) The student will describe the installation rules for electrical systems around swimming pools, spas, and hot tubs.            CT I 12(L) The student will describe the installation and control of lighting fixtures.            CT I 12(M) The student will explain how wiring devices are selected and installed.</p>		