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| **TEXAS CTE LESSON PLAN** [www.txcte.org](http://www.txcte.org) |
| **Lesson Identification and TEKS Addressed** |
| **Career Cluster** | Law, Public Safety, Corrections, & Security |
| **Course Name** | Firefighter II |
| **Lesson/Unit Title** | Fire Hose Skills |
| **TEKS Student Expectations** | **130.335. (c) Knowledge and Skills**(6) The student describes the purpose of the National Fire Protection Association standards applicable to fire service hoses and reviews the procedures for care, maintenance, and inspection of fire hoses, couplings, nozzles, and water valves. (D) The student is expected to demonstrate the one- and two-person methods of connecting, dismantling, and rolling various sizes of hose lines(E) The student is expected to demonstrate advancing dry hose lines and charged attack lines of different sizes(F) The student is expected to demonstrate methods of hose load finishes(G) The student is expected to describe and demonstrate extending a section of hose and replacing damaged sections of hose using proper safety equipment such as clothing for performing overhaul activities |
| **Basic Direct Teach Lesson**(Includes Special Education Modifications/Accommodations and one English Language Proficiency Standards (ELPS) Strategy) |
| **Instructional Objectives** | The students will be able to:1. Demonstrate the one- and two-person methods of connecting, dismantling, and rolling various sizes of hose lines2. Demonstrate advancing dry hose lines and charged attack lines of different sizes3. Demonstrate methods of hose load finishes4. Describe and demonstrate extending a section of hose5. Describe and demonstrate replacing damaged sections of hose using proper safety equipment such as clothing for performing overhaul activities |
| **Rationale** | Safe and successful completion of fire hose operations on the fireground demand teamwork and coordination. Firefighters must continue to train to keep current their knowledge of and skills with the various fire hoses. Technological advances cause fire hose materials, sizes, nozzles, and operations to change. Firefighters must stay abreast of these changes throughout their training and careers. |
| **Duration of Lesson** | 12 hours |
| **Word Wall/Key Vocabulary***(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* |  |
| **Materials/Specialized Equipment Needed** | * Fire Hose Skills Worksheet
* Fire hoses (various sizes)
* Nozzles: 1½” and 2½”, solid stream and fog nozzles
* 3” Hose clamp
* 2½” to 1½” wye
* 2½ shutoff valve for hydrant
* Hydrant wrench
* Personal Protective Equipment
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| **Anticipatory Set**(May include pre-assessment for prior knowledge) | Show different sizes of fire hose to students and explain the difference between supply lines and attack lines. Ideally, if you have access to a fire company, have it show a pumper with the different sizes of fire hose carried on the unit and the different loads designed for specific operations. Have students hold different sizes of fire hose and have them identify the characteristics of each and guess its use (attack, supply, or both). Discuss with students the importance of understanding the uses of different types of fire hoses in the fire service. Use the Discussion Rubric for assessment. |
| **Direct Instruction \*** | 1. Fire Hose Skills
	1. Performing Hose Rolls
		1. Straight Hose Roll (for use with all sizes of fire hose)
			1. Lay out the hose straight and flat on a clean surface
			2. Roll the male coupling over onto the hose to start the roll
			3. Form a coil that is open enough to allow fingers to be inserted
			4. Continue rolling the coupling over onto the hose, forming an even roll
			5. Keep the edges of the roll aligned on the remaining hose to make a uniform roll as the roll increases in size
			6. Lay the completed roll on the ground
			7. Tamp any protruding coils down into the roll with a foot (step on it)
		2. Donut Hose Roll
			1. Method One
				1. Lay the section of hose flat and in a straight line
				2. Start the roll from a point 5 or 6 feet off center, toward the male coupling
				3. Roll the hose toward the female end. Leave sufficient space at the center loop to insert a hand for carrying
				4. Extend the short length of hose at the female end over the male threads to protect them
			2. Method Two
				1. Grasp either coupling end and carry it to the opposite end
				2. Face the coupling ends
				3. Start the roll on the male coupling side about 2½ feet from the bend (1½ feet for 1½ inch hose)
				4. Roll the hose toward the male coupling
				5. Pull the female side back a short distance to relieve the tension if the hose behind the roll becomes light during the roll
				6. Lay the roll flat on the ground as the roll approaches the male coupling
				7. Draw the female coupling end around the male coupling to complete the roll
	2. Connecting Fire Hoses
		1. One-Person Foot-Tilt Method
			1. Stand facing the two couplings so that one foot is near the male end
			2. Place a foot on the hose directly behind the male coupling
			3. Apply pressure to tilt it upward
			4. Grasp the female end by placing one hand behind the coupling and the other hand on the coupling swivel
			5. Bring the two couplings together and turn the swivel clockwise with your thumb to make the connection
		2. Two-Person Method
			1. *Firefighter 1:* Grasp the male coupling with both hands
			2. *Firefighter 1:* Bend the hose directly behind the coupling
			3. *Firefighter 1:* Hold the coupling and hose tightly against yourupper thigh or midsection with the male threads pointed outward
			4. *Firefighter 2:* Grasp the female coupling with both hands
			5. *Firefighter 2:* Bring the two couplings together and align theirpositions
			6. *Firefighter 2:* Turn the female coupling counterclockwise untila click is heard. This indicates that the threads are aligned
			7. *Firefighter 2:* Turn the female swivel clockwise to complete the connection
	3. Uncoupling Fire Hoses
		1. One-Person Knee-Press Method
			1. Grasp the hose behind the female coupling
			2. Stand the male coupling on end
			3. Set your feet wide for balance
			4. Place one knee on the hose and the shank of the female coupling
			5. Snap the swivel quickly in a counterclockwise direction as your body weight is applied to loosen the connection
		2. Two-Person Method
			1. *Both Firefighters:* Take a firm two-hand grip on therespective coupling and press the coupling toward the other firefighter, thereby compressing the gasket in the coupling
			2. *Both Firefighters:* Keep your arms stiff and use the weight ofboth of your bodies to turn each hose coupling counter-clockwise, thus loosening the connection
	4. Performing Hose Load Finishes
		1. Accordion Hose Load
			1. Lay the first length of hose in the bed on the edge against the partition, with the female coupling hanging out
			2. Fold the hose at the front of the hose-bed back on itself
			3. Lay the hose back to the rear next to the first length
			4. Fold the hose at the rear of the hose-bed so that the bend is even with the rear edge of the bed
			5. Lay the hose back to the front
			6. Continue laying the hose in folds across the hose-bed
				1. *Note:* Stagger the folds at the rear edge of the bed sothat every other bend is approximately 2 inches shorter than the edge of the bed. This stagger may also be done at the front of the bed if desired
			7. Angle the hose upward to start the next tier
			8. Make the first fold of the second tier directly over the last fold of the first tier at the rear of the bed
			9. Continue with the second tier in the same manner as the first, progressively laying the hose in folds across the hose-bed
			10. Make the third and all subsequent tiers in the same manner as the first two tiers
			11. Move to the opposite hose-bed
			12. Load the hose in the same manner as the first side
			13. Connect the last coupling on top with the female coupling from the first side when the load is complete
			14. Lay the connected couplings on top of the hose load
			15. Pull out the slack so that the crossover loop lies tightly against the hose load
		2. Horseshoe Hose Load
			1. Place the coupling in a front corner of the hose-bed
			2. Lay the first length of hose on the edge against the wall
			3. Make the first fold at the rear even with the edge of the hose-bed
			4. Lay the hose to the front and then around the perimeter of the bed so that the hose comes back to the rear along the opposite side
			5. Make a fold at the rear in the same manner as before
			6. Lay the hose back around the perimeter of the hose-bed inside the first length of hose
			7. Lay succeeding lengths progressively inward toward the center until the entire space is filled
			8. Start the second tier by extending the hose from the last fold directly to a front corner of the bed, laying it flat on the hose of the first tier
			9. Make the second and all subsequent tiers in the same manner as the first
		3. Flat Hose Load
			1. Inspect the hose and hose couplings for damage
			2. Place the first coupling at a front corner of the hose-bed
			3. Lay the hose flat in the hose-bed in a front-to-back fashion
			4. Fold the hose back on itself (make a loop) and lay the hose in the opposite direction. Repeat until hose covers the bottom of the hose-bed
			5. Start the second layer by repeating steps 3 and 4. Repeat until all the hose is loaded
			6. Finish hose load with a donut roll or other finish as required by local protocol
		4. Pre-Connected Flat Hose Load
			1. Attach the female coupling to the discharge outlet
			2. Lay the first length of hose flat in the bed against the side wall
			3. Angle the hose to lay the next fold adjacent to the first fold and continue building the first tier
			4. Make a fold that extends approximately 8 inches beyond the load at a point that is approximately one-third the total length of the load. This loop will later serve as a pull handle
			5. Continue laying the hose in the same manner, building each tier with folds laid progressively across the bed
			6. Make a fold that extends approximately 14 inches beyond the load at a point that is approximately two-thirds the total length of the load. This loop will also serve as a pull handle
			7. Complete the load
			8. Attach the nozzle and lay it on top of the load
		5. Triple Layer Hose Load
			1. Connect the female coupling to the discharge outlet. *Note:* Start the load with the sections of hose connected and the nozzle attached
			2. Extend the hose in a straight line to the rear
			3. Pick up the hose at a point two-thirds of the distance from the tailboard to the nozzle
			4. Carry this hose to the tailboard
			5. Using several firefighters, pick up the entire length of the three layers
			6. Begin laying the hose into the bed by folding over the three layers into the hose-bed
			7. Fold the layers over at the front of the bed
			8. Lay them back to the rear on top of the previously laid hose
				1. *Note:* If the hose compartment is wider than one hosewidth, alternate folds on each side of the bed. Make all folds at the rear even with the edge of the hose-bed
			9. Continue to lay the hose into the bed in an S-shaped configuration until the entire length is loaded
			10. *Optional:* Secure the nozzle to the first set of loops using arope or strap if desired
				1. *Note:* Some departments like to pull the loop at theend through the nozzle bale. This can be a problem if the line is charged before removing the loop from the bale. Once the line is charged, it may not be possible to pull the loop through the bale
		6. Minuteman Hose Load
			1. Connect the first section of hose to the discharge outlet. Do not connect it to the other lengths of hose
			2. Lay the hose flat in the bed to the front
			3. Lay the remaining hose out the front of the bed to be loaded later
				1. *Note:* If the discharge outlet is at the front of the bed,lay the hose to the rear of the bed and then back to the front before it is set aside. This provides slack hose for pulling the load clear of the bed
			4. Couple the remaining hose sections together
			5. Attach a nozzle to the male end
			6. Place the nozzle on top of the first length at the rear
			7. Angle the hose to the opposite side of the bed and make a fold
			8. Lay the hose back to the rear
			9. Make a fold at the rear of the bed
			10. Angle the hose back to the other side and make a fold at the front.
				1. *Note:* The first fold or two may be longer than theothers to facilitate the pulling of the hose from the bed
			11. Continue loading the hose to alternating sides of the bed in the same manner until the complete length is loaded
			12. Lay the remainder of the first section in the bed in the same manner
	5. Advancing Dry Hose Lines
		1. Pre-Connected Flat Hose Load
			1. Put one arm through the longer loop
			2. Grasp the shorter pull loop with the same hand
			3. Grasp the nozzle with the opposite hand
			4. Pull the load from the bed using the pull loops
			5. Walk toward the fire
			6. Proceed until the hose is fully extended
			7. Conduct visual size-up of the scene to identify hazards.
		2. Minuteman Hose Load
			1. Grasp the nozzle and the bottom loops, if provided
			2. Pull the load approximately one-third to one-half of the way out of the hose-bed
			3. Face away from the apparatus
			4. Place the hose load on your shoulder with the nozzle against your stomach
			5. Walk away from the apparatus, pulling the hose out of the bed by the bottom loop
			6. Advance toward the fire, allowing the load to pay off from the top of the pile
			7. Conduct a visual size-up of the scene to identify hazards
		3. Triple Layer Hose Load
			1. Place the nozzle and the fold of the first tier over your shoulder
			2. Face the direction of travel
			3. Walk away from the apparatus
			4. Pull the hose completely out of the bed
			5. Drop the folded end from your shoulder when the hose-bed has been cleared
			6. Advance the nozzle
			7. Conduct a visual size-up of the scene to identify hazards
		4. Shoulder Method (Flat Shoulder Load)
			1. *Firefighter 1:* Attach the nozzle to the end of the hose ifdesired.
				1. *Note:* Assist other firefighters with loading the hose ontheir shoulders
			2. *Firefighter 2:* Position at the tailboard facing the direction oftravel
			3. *Firefighter 2:* Place the initial fold of hose over the shoulderso that the nozzle can be held at chest height
			4. *Firefighter 2:* Bring the hose from behind your back over yourshoulder so that the rear-fold ends at the back of the knee
			5. *Firefighter 2:* Make a fold in front that ends at knee heightand bring the hose back over your shoulder
			6. *Firefighter 2:* Move forward approximately 15 feet
			7. *Firefighter 3:* Load hose onto your shoulder in the samemanner as Firefighter 2 while making knee-high folds until an appropriate amount of hose is loaded
			8. *Firefighter 1:* Uncouple the hose from the hose-bed andhand the coupling to the last firefighter
		5. Working Line Drag Method
			1. Stand alongside a single hose line at a coupling or a nozzle
			2. Face the direction of travel
			3. Place the hose over the shoulder with a coupling in front, resting on your chest
			4. Hold the coupling or nozzle in place and pull with your shoulder
			5. Position additional firefighters at each coupling to assist in advancing the hose
		6. Into a Structure
			1. Confirm order with officer to advance a line into the structure
			2. Unload the hose using the accordion unload
			3. Horseshoe shoulder the hose, all firefighters placing the hose on the same shoulder. Firefighters spaced about 12 feet apart on same side of hose facing the nozzle with about 15 feet of hose between each firefighter
			4. Start airflow in Self-Contained Breathing Apparatus (SCBA) before approaching the structure entrance or entering the smoke environment
			5. Advance the hose to the building entrance but do not enter the building. Size-up the environment to identify hazards. Approach door from the side opposite the hinges
			6. Firefighter on nozzle
				1. Direct the driver/operator to charge hose line
				2. Set the desired nozzle pattern and bleed the air from the hose line
				3. Confirm readiness to enter structure with officer
				4. Enter the structure while staying low and maintaining spacing
				5. Maintain situational awareness of the environment and fire conditions
		7. Up Interior Stairs (uncharged)
			1. Confirm order with officer to advance a line into the structure
			2. Position for shouldering the hose line by facing the nozzle with about 15 feet to 20 feet of hose between each firefighter
			3. Place hose bundles on same shoulders per appropriate shoulder carry
			4. Position stationary firefighters along the route and on the stairs at critical points (obstructions and corners) to help feed the hose and to keep the hose on the outside of the staircase
				1. *Note:* the last several firefighters can assume thesestationary positions after their shoulder loads have paid out
			5. Advance the hose line up a flight of stairs against the outside wall avoiding sharp bends and kinks and maintaining spacing between firefighters
			6. Flake excess hose up the stairway leading to the floor above the fire to make fire floor advance easier and quicker
			7. Lay the hose down the stairway along outside wall to fire floor
			8. *Last firefighter:* After hose supply is depleted, advance andassist nozzle operator in removing kinks and pushing hose to the outside wall of the stairway as necessary
		8. Down Interior Stairs (uncharged)
			1. Confirm order with officer to advance a line into the structure Position for shouldering the hose line by facing the nozzle with about 25 feet to 30 feet of hose between each firefighter
			2. Place hose bundles on same shoulders per appropriate shoulder carry
			3. Position stationary firefighters along the route and at top of the stairs at critical points (obstructions and corners) to help feed the hose and to keep the hose on the outside of the staircase
				1. *Note:* The last several firefighters can assume thesestationary positions after their shoulder loads have paid out
			4. Advance the hose line down a flight of stairs against the outside wall, avoiding sharp bends and kinks and maintaining spacing between firefighters
			5. *Last firefighter:* After the hose supply is depleted, advanceand assist the nozzle operator in removing kinks and pushing the hose to the outside wall of the stairway as necessary
		9. Up a Ladder into a Window (uncharged)
			1. Confirm order with officer to advance a line into the structure
			2. Position firefighters all on same side of hose, all facing the nozzle, with about 10 feet between each firefighter
			3. Place the line over your shoulders
			4. Climb the ladder
			5. *Nozzle firefighter:* Enter the window laying down the nozzlein window before entering
			6. *Other Firefighters:*
				1. Lock-in
				2. Feed the hose to the nozzle firefighter until the nozzle firefighter has advanced to the desired location and signals you to stop
				3. Secure the hose to the top rung of the ladder with a hose strap tool or utility strap, tying a clove hitch if using a utility strap
			7. *Firefighter nearest top:* Advance up the ladder to back up thenozzle firefighter
	6. Advancing Charged Hose Lines
		1. Up Interior Stairs
			1. Confirm order with officer to advance a line into the structure
			2. Advance the line using the working line drag
			3. Position stationary firefighters along the route and at top of the stairs at critical pints (obstructions and corners) to help feed the hose and to keep the hose on the outside of the staircase
			4. Advance up the stairs against outside wall, avoiding sharp bends and kinks, maintaining spacing between firefighters, and using working drag to one floor above fire floor
			5. Make a large loop on floor above fire floor to provide excess line for fire floor advancement
			6. Advance the hose down the stairway to the fire floor, using working drag
			7. *Last firefighter:* After hose supply is depleted, advance andassist nozzle operator in removing kinks, pushing the hose to the outside wall of the stairway as necessary
		2. Down Interior Stairs
			1. Confirm order with officer to advance a line into the structure
			2. Use the working drag to advance the line
			3. Position stationary firefighters along the route and at top of the stairs at critical pints (obstructions and corners) to help feed the hose and to keep the hose on the outside of the staircase
			4. Advance down the stairs against the outside wall, avoiding sharp bends and kinks, maintaining spacing between firefighters, and using working drag to one floor above fire floor
			5. *Second Firefighter:* After all hose is advanced, advance andassist nozzle operator to push hose to the outside wall of the stairway
		3. Up a Ladder into a Window
			1. Confirm order with officer to advance a line into the structure
			2. Position with one firefighter heeling ladder and remaining firefighters on same side of hose facing nozzle spaced about 6 to 8 feet apart
			3. Climb the ladder, firefighter who will operate the nozzle first and the others as their turns come
			4. Lock in with leg lock or Class I safety harness, leaving hands free to control and advance the hose
			5. *Firefighters below:* Feed the hose to the nozzle firefighter
			6. *Nozzle firefighter:* Enter the window
			7. *Firefighter on ladder:* Advance up the ladder, maintainingappropriate distance from one another
			8. *Firefighter on ladder:* Lock in when backup firefighter is inposition opposite the window, using leg lock or Class I harness
			9. *Backup firefighter:* Enter the window
			10. *Firefighters below:* Feed the hose to nozzle and backupfirefighters until signaled to stop
			11. *Firefighters on ladder:* Secure the hose to the ladderG.

Extending a Hose Line or Replacing a Damaged Section of Hose* 1. Bring additional sections of hose as needed to the nozzle end of the hose line
	2. Open the nozzle slightly
	3. Apply a hose clamp approximately 5 feet behind the nozzle or call for the hose line to be shut down at the pump panel
	4. Remove the nozzle
	5. Add the new section(s) of hose
	6. Reattach the nozzle
	7. Recharge the hose line by slowly releasing the hose clamp or calling for the line to be charged
	8. Check the nozzle pattern and bleed air from the hose line
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| **Guided Practice \*** | Fire Hose Roll Skills Demonstrations – Demonstrate a fire hose skill for the class. Partner or group the students together and allow them time to practice the roll together. Informally assess the students’ progress during practice time and assist students when needed. Then formally assess each student’s ability to complete the roll. Repeat these steps for each roll. Use the information in the key-points section and/or your experience to assess accuracy. Document your assessment of student achievement on the Fire Hose Rolls Checklist. (*Note:* Students should wear their PPE always when performing fire-hose drills.)Fire Company Visit – Decide to either have a fire company visit your class or take your class on a field trip to show your students the hose make up of a fire company. Afterward, discuss the experience as a class. Use the Discussion Rubric for assessment.Fire Company Shadowing – Ask your local fire company if your class may assist it with its annual fire hose maintenance. Fire companies need to remove all their fire hoses and run water through them once a year. Students may help perform this operation to gain practice with fire hoses. Use the Individual Work Rubric for assessment. (*Note:* Students should wear their PPE always when performing fire-hose drills.)Nozzle Operations – If you have access to a fire hydrant, put a shutoff valve on the 2½” discharge, connect a 2½” leader line, and supply a wye assembly to give your class practice on nozzle operations and working with charged lines. (*Note:* Students should wear their PPE always when performing fire hose-drills.)Fire Explorers Post – Create a Fire Explorers Post (http://exploring.learningforlife.org/services/career-exploring/fire-service/) and recruit members of your local fire station to become members and trainers for your explorers. |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | Fire Service Hose Analysis – Lay out various sections of fire hose. Have the students identify and list the following for each of the fire hoses: the diameter, the types of couplings and lugs, and the function (e.g. attack hose, supply hose, or both). Use the Fire Service Hoses Worksheet for the activity. For assessment create a key using the worksheet or use the Individual Work Rubric. |
| **Lesson Closure** |  |
| **Summative/End of Lesson Assessment \***  | * Fire Hose Skills Quiz and Key
* Fire Hose Rolls Checklist
* Discussion Rubric
* Individual Work Rubric

**Accommodations for Learning Differences:** For reinforcement, students will draw and describe the hose classifications in a vocabulary journal. Use the Individual Work Rubric for assessment.  |
| **References/Resources/****Teacher Preparation** | * ISBN: 0135151112, *Essentials of Firefighting* (5th Edition), International Fire Service Training Association (IFSTA), 2008.\*
* \*Key Points are all skills obtained from *Essentials of Firefighting* (5th Edition). However, many skills are dependent on jurisdiction and may differ slightly.
* Fire & Emergency Services Career Exploring <http://www.exploring.org/fire-ems/>
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| **Additional Required Components** |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** |  |
| **Recommended Strategies** |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy****Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies****Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication****90 Second Speech Topics** |  |
| **Other Essential Lesson Components** |
| **Enrichment Activity**(e.g., homework assignment) | For enrichment, students will participate in skills testing and practice using hoses, hose tools, appliances, and a hydrant. Use the Individual Work Rubric for assessment. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)