# Scope & Sequence

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| Course Name: Firefighter I **TSDS PEIMS Code:** 13029900 | | | **Course Credit:** 2.0  **Course Requirements:** Grade Placement: 10-12.  **Prerequisites:** None.  **Recommended Prerequisites:** Principles of Law, Public Safety, Corrections, and Security and Law Enforcement I. |
| **Course Description:** Firefighter I introduces students to firefighter safety and development. Students will analyze Texas Commission on Fire Protection rules and regulations, proper incident reporting and records, proper use of personal protective equipment, and the principles of fire safety. | | | |
| **NOTE:** This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered. | | | |
| **Total Number of Periods**  **Total Number of Minutes**  **Total Number of Hours** | 350 Periods  15,750 Minutes  262.5 Hours | \*Schedule calculations based on 175/180 calendar days. For 0.5 credit courses, schedule is calculated out of 88/90 days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc. | |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***  (assumes 45-minute periods)  Total minutes per unit | **TEKS Covered**  **130.334. (c) Knowledge and skills.** | |
| **Unit 1: Professional Standards and Safety Procedures**    This unit is designed to inform future LPSCS students about industry expectations for employability and professional standards. Students will review and discuss professional standards and employability skills as well as safety procedures for maintaining a safe environment in a variety of situations. | 20 Periods  900 Minutes | 1. The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to achieve business and industry employability skills standards such as attendance, on-time arrival, meeting deadlines, working toward personal/team goals every day, and ethical use of technology.   (19) The student identifies safety procedures for ensuring a safe environment. The student is expected to:  (A) identify protective equipment and describe its uses;  (B) recognize traffic and scene control devices;  (C) identify structure fire and roadway emergency scene potential hazards;  (D) describe solutions to mitigate potential hazards; and  (E) describe procedures for safe operation at emergency scenes. | |
| **Unit 2: Communication Skills**  Inthis unit students will learn effective communication skills tailored to careers in Fire Science. This includes radio communications. Students will practice the steps involved in using radio communication for fire management and apply the Incident Command System to manage mock emergencies and scenarios. | 20 Periods  900 Minutes | (2) The student uses communication skills as related to fire management. The student is expected to:  (A) demonstrate the use of speech and written communication platforms common to fire management services;  (B) practice steps involved in using radio communication for fire management;  (C) apply the Incident Command System to manage emergencies; and  (D) apply protocols in emergency management response when working at an accident scene. | |
| **Unit 3: Safety Procedures and Protocols**  In this unit students will learn and apply local, state and federal regulations for safety and hazardous materials. Students will practice personal safety procedures and apply protocols for handling hazardous materials in various scenarios. | 25 Periods  1,125 Minutes | (3) The student executes safety procedures and protocols associated with fire management services. The student is expected to:  (A) apply local, state, and federal regulations pertaining to safety issues;  (B) apply protocols for handling hazardous materials at the awareness level; and  (C) practice personal safety procedures. | |
| **Unit 4: Accidents, Injuries, and Causes**  In this unit students will learn to recognize the most common types of accidents and injuries as well as potential long-term health considerations for firefighters. Students will learn and describe the elements of a personnel accountability system and the application of the system at an incident, identify common types of accidents or injuries such as those occurring at the emergency scene, responding to and returning from calls on fire apparatus, in personal vehicles, at the fire station, at other on-duty locations, and during training, and demonstrate techniques for action when trapped or disoriented in a fire situation or in a hostile environment. | 40 Periods  1,800 Minutes | (17) The student recognizes common types of accidents and injuries and their causes. The student is expected to:  (A) describe the elements of a personnel accountability system and the application of the system at an incident;  (B) identify potential long-term firefighter health considerations of exposure to products of combustion;  (C) identify common types of accidents or injuries such as those occurring at the emergency scene, responding to and returning from calls on fire apparatus, in personal vehicles, at the fire station, at other on-duty locations, and during training; and  (D) demonstrate techniques for action when trapped or disoriented in a fire situation or in a hostile environment. | |
| **Unit 5: Safe Handling of Accidents and Hazards**  In this unit students will learn how to handle various accidents and hazards on the scene. Students will learn and describe the procedures for terminating utility services to a building, learn and explain hazards that exist, and describe procedures to be used in electrical emergencies, learn and describe safety procedures for fire service lighting equipment, and learn and demonstrate the procedures for the use of safety equipment such as seat belts, ear protection, eye protection, and other safety equipment provided for protection while riding on apparatus. | 40 Periods  1,800 Minutes | (18) The student describes the handling of different types of accidents and hazards. The student is expected to:  (A) describe the procedures for terminating utility services to a building;  (B) explain hazards that exist and describe procedures to be used in electrical emergencies;  (C) describe the safe handling and operation of hand and power tools;  (D) describe safety procedures for fire service lighting equipment such as power supply (portable or mounted), lights, cords, and connectors; and  (E) recognize the procedures for the use of safety equipment such as seat belts, ear protection, eye protection, and other safety equipment provided for protection while riding on apparatus. | |
| **Unit** **6: Understanding the Science of Fire**  At the completion of this unit students will understand the science behind fires, how to extinguish fires, types of fires, energy sources for fires, and terms used by firefighters. Students will describe the four products of combustion commonly found in structural fires that create a life hazard, describe the process of thermal layering, and explain the special conditions that occur during a fire's growth. Students will also describe heat energy sources and identify the stages of fire development as well as units and conversions of heat measurement, methods of heat transfer, and examples of heat transfer in various emergency situations. | 25 Periods  1,125 Minutes | (6) The student describes the stages of a fire, the process of combustion, and the appropriate action to be taken for extinguishment. The student is expected to:  (A) describe the four products of combustion commonly found in structural fires that create a life hazard;  (B) define terms such as fire, flash point, ignition temperature, fire point, flammable (explosive) range, boiling point, oxidation, pyrolysis, reducing agent, vaporization, combustion, vapor density, and specific gravity;  (C) describe the process of thermal layering that occurs in structural fires and how to avoid disturbing the normal layering of heat;  (D) define fire triangle and fire tetrahedron;  (E) describe heat energy sources such as chemical, electrical, mechanical, and nuclear;  (F) identify the stages of fire development;  (G) explain the special conditions that occur during a fire's growth such as flameover, rollover, flashover, thermal layering, and backdraft; and  (H) identify the units of heat measurement and how to convert units.  (7) The student describes the methods of heat transfer. The student is expected to:  (A) describe methods of heat transfer such as conduction, convection, and radiation; and  (B) describe examples of heat transfer in fire emergencies such as conduction, convection, and radiation. | |
| **Unit 7: Fuels and the Combustion Process**  In this unit students will learn the science behind various types of fires. Students will describe the physical states of matter in which fuels are commonly found, such as solid, liquid, and gaseous fuels, explain terms related to the combustion process, and identify narcotic asphyxiant gases and irritants common in smoke. | 20 Periods  900 Minutes | (8) The student analyzes the physical states of matter in which fuels are commonly found. The student is expected to:  (A) describe the physical states of matter in which fuels are commonly found such as solid, liquid, and gaseous fuels;  (B) explain terms related to the combustion process such as specific gravity, vapor density, and the theory of surface-to-mass ratio; and  (C) identify narcotic asphyxiant gases and irritants common in smoke. | |
| **Unit 8: Fire Extinguishment**  Students in this unit will learn the theory behind fire extinguishment as well as methods of extinguishment. Students will describe the fire extinguishment theory and the law of thermodynamics as it relates to specific heat, latent heat, and heat flow, and practice, analyze, and compare advantages, disadvantages, and methods of extinguishment in various situations and scenarios. | 40 Periods  1,800 Minutes | (9) The student comprehends the fire extinguishment theory. The student is expected to:  (A) describe the fire extinguishment theory; and  (B) analyze methods of extinguishment such as temperature reduction, fuel removal, oxygen exclusion, and inhibiting chemical reaction.  (10) The student describes the characteristics of water as it relates to fire extinguishing potential. The student is expected to:  (A) explain the law of thermodynamics as it relates to specific heat, latent heat, and heat flow; and  (B) compare the advantages and disadvantages of water as an extinguishing agent. | |
| **Unit 9: Self-Contained Breathing Apparatus and the Human Body**  Students in this unit study human respiratory and cardiovascular systems to better understand physical requirements and hazards during firefighting, as well as the proper use of a self-contained breathing apparatus.  Students will practice and gain confidence wearing the self-contained breathing apparatus, learn safety rules, routine maintenance, and demonstrate how to wear the apparatus while performing firefighting skills. Students will also demonstrate rescue procedures as well as emergency procedures to be used in the event of failure of the self-contained breathing apparatus, describe the limitations, safety features and function of the open circuit self-contained breathing apparatus, and demonstrate inspection, care, and testing procedures. | 40 Periods  1,800 Minutes | (11) The student analyzes the internal systems that sustain life in the human body and identifies the physical requirements of a self-contained breathing apparatus wearer. The student is expected to:  (A) describe the internal systems that sustain life in the human body such as the respiratory and cardiovascular systems;  (B) describe the National Fire Protection Association standards applicable to the self-contained breathing apparatus;  (C) identify the firefighter's physical requirements for wearing a self-contained breathing apparatus;  (D) identify respiratory hazards during firefighting that require the use of respiratory protection;  (E) identify the different types of self-contained breathing apparatus; and  (F) describe the safety features and function of the open circuit self-contained breathing apparatus.  (12) The student demonstrates confidence in performing firefighting skills while wearing a self-contained breathing apparatus. The student is expected to:  (A) identify the safety requirements when using the self-contained breathing apparatus;  (B) describe how to calculate the air supply duration in the cylinder;  (C) describe the safety rules when wearing the self-contained breathing apparatus;  (D) describe the uses and limitations of the self-contained breathing apparatus;  (E) demonstrate the various methods of donning and doffing the self-contained breathing apparatus while wearing protective clothing;  (F) demonstrate the replacement of an expended cylinder on a self-contained breathing apparatus assembly with a full cylinder;  (G) demonstrate rescue procedures without compromising the rescuer's respiratory protection such as rescuing a firefighter with functioning respiratory protection, a firefighter without functioning respiratory protection, or a civilian without respiratory protection;  (H) perform firefighting skills while wearing the self-contained breathing apparatus with a fully charged cylinder;  (I) demonstrate the use of the self-contained breathing apparatus to manage a restricted passage in conditions of obscured visibility; and  (J) demonstrate emergency procedures to be used in the event of failure of the self-contained breathing apparatus.  (13) The student demonstrates inspection, care, and testing procedures for the self-contained breathing apparatus. The student is expected to:  (A) document routine maintenance for the self-contained breathing apparatus; and  (B) describe the use of an air supply system for recharging an air cylinder and cylinder testing maintenance of a self-contained breathing apparatus. | |
| **Unit 10: Protective Clothing and Equipment**  In this unit students will identify components of protective clothing and equipment, learn proper inspection and maintenance, and recognize personal limitations for firefighters wearing the protective clothing and personal protective equipment. Students will demonstrate and explain the donning and doffing of personal protective equipment as well as the correct procedures for inspection and maintenance of personal protective equipment and clothing. | 20 Periods  900 Minutes | (14) The student identifies the types and components of fire service protective clothing and personal protective equipment. The student is expected to:  (A) identify the various types of fire service protective clothing;  (B) identify the different components of structural firefighting protective equipment and their functions;  (C) demonstrate the correct procedures for inspection and maintenance of personal protective equipment;  (D) describe the limitations of personal protective equipment in providing protection to firefighters;  (E) explain the physical limitations of a firefighter working in a personal protective ensemble; and  (F) demonstrate the donning and doffing of personal protective equipment such as helmet with eye protection, hood, boots, gloves, protective coat and trousers, self-contained breathing apparatus, and personal alert safety system device. | |
| **Unit 11: Personal Alert Safety Systems**  In this unit students will learn and demonstrate the proper operation and testing of a personal alert safety system device. | 5 Periods  225 Minutes | (15) The student demonstrates the proper testing and operation of a personal alert safety system device. The student is expected to:  (A) explain the proper operation of a personal alert safety system; and  (B) demonstrate the proper testing of a personal alert safety system. | |
| **Unit 12: Certification and Responsibilities**  In this unit students will learn and identify the correct laws and rules applicable to basic firefighter certification, review the Texas Commission on Fire Protection requirements for certification as a basic firefighter, learn and identify the various levels of firefighter and instructor certifications, and describe the responsibilities of a firefighter. Students will discuss realistic timelines as well as appropriate strategies for certification preparation. | 25 Periods  1,125 Minutes | (5) The student applies laws, ordinances, regulations, and rules as defined by the Texas Commission on Fire Protection Certification Curriculum Manual to perform duties within a set of rules or protocols. The student is expected to:  (A) identify the correct laws and rules applicable to basic firefighter certification by the Texas Commission on Fire Protection;  (B) review the Texas Commission on Fire Protection requirements for certification as a basic firefighter as stated in the Standards Manual for Fire Protection Personnel;  (C) identify the various levels of firefighter certifications by the Texas Commission on Fire Protection as stated in the Standards Manual for Fire Protection Personnel;  (D) identify the levels of instructor certification by the Texas Commission on Fire Protection as stated in the Standards Manual for Fire Protection Personnel; and  (E) describe responsibilities of a firefighter as required by the National Fire Protection Association 1500: Standard on Fire Department Occupational Safety and Health Program. | |
| **Unit 13: Understanding Fire Departments**  This unit covers all aspects of the fire department organization, including organizational structure, rules, regulations, and mission. Students will identify the mission of the fire service and of the local fire department, describe the function of a standard operating system and the role and responsibilities of a firefighter, and explain the components of a member assistance program. | Choose a building block.  20 Periods  900 Minutes | (16) The student recognizes all aspects of the fire department organization. The student is expected to:  (A) identify aspects of the fire department organization;  (B) explain the firefighter's role as a member of the fire department;  (C) analyze the rules and regulations common to most fire departments;  (D) identify the mission of the fire service and of the local fire department according to the authority having jurisdiction;  (E) describe the function of a standard operating system and the responsibilities of a firefighter relating to compliance with the provisions of occupational safety and health programs; and  (F) explain the components of a member assistance program. | |
| **Unit 14: Developing an Institutional Professional Growth Plan**  In this unit students will discuss the steps in developing an institutional professional growth plan for team building and leadership skills. In culminating activities, students will identify and practice techniques for functioning within a group environment and demonstrate model leadership in classroom activities and/or fire management system scenarios.  Students will also research and discuss leadership and teamwork opportunities and other benefits offered by CTSO and/or other extracurricular activities. | 10 Periods  450 Minutes | (4) The student comprehends the steps to develop an institutional professional growth plan to develop team building and leadership skills common for fire management systems. The student is expected to:  (A) recognize techniques for functioning within a group environment; and  (B) demonstrate model leadership within fire management. | |