Department of Education | College, Career and Technical Education

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Fire Prevention

Primary Career Cluster:	Law, Public Safety, Corrections, & Security
Course Contact:	CTE.Standards@tn.gov
Course Code(s):	C30H05
Prerequisite(s):	*Principles of Fire and Emergency Services (C30H04)*
Credit:	1
Grade Level:	10-11
Focused Elective Graduation Requirements:	This course satisfies one of three credits required for an elective focus when taken in conjunction with other Law, Public Safety, Corrections, & Security courses.
POS Concentrator:	This course satisfies one out of two required courses that must be taken from a single program of study to meet the Perkins V concentrator definition requirements.
Programs of Study and Sequence:	This is second course in the *Fire Management Services* program of study.
Aligned Student Organization(s):	SkillsUSA: https://www.skillsusatn.org/
Coordinating Work-Based Learning:	Teachers are encouraged to use embedded WBL activities such as informational interviewing, job shadowing, and career mentoring. For information, visit https://www.tn.gov/education/educators/career-and-technical-education/work-based-learning.html
Promoted Tennessee Student Industry Credentials	Credentials are aligned with postsecondary and employment opportunities and with the competencies and skills that students acquire through their selected program of study. For a listing of promoted student industry credentials, visit https://www.tn.gov/education/educators/career-and-technical-education/student-industry-certification.html
Teacher Endorsement(s):	751
Required Teacher Certifications/Training:	Tennessee Fire Commission Firefighter Instructor 1
Teacher Resources:	https://www.tn.gov/education/educators/career-and-technical-education/career-clusters/cte-cluster-law-public-safety.html Best for All Central: https://bestforall.tnedu.gov/

Approved April 15, 2016; Amended January 28, 2018

Course at a Glance

CTE courses provide students with an opportunity to develop specific academic, technical, and 21st century skills necessary to be successful in career and in life. In pursuit of ensuring every student in Tennessee achieves this level of success, we begin with rigorous course standards which feed into intentionally designed programs of study.

Students engage in industry relevant content through general education integration and experiences such as career & technical student organizations (CTSO) and work-based learning (WBL). Through these experiences, students are immersed with industry standard content and technology, solve industry-based problems, meaningfully interact with industry professionals, and use/produce industry specific, informational texts.

Using a Career and Technical Student Organization (CTSO) in Your Classroom

CTSOs are a great resource to put classroom learning into real-life experiences for your students through classroom, regional, state, and national competitions, and leadership opportunities. Below are CTSO connections for this course, note this is not an exhaustive list.

- Participate in CTSO Fall Leadership Conference to engage with peers by demonstrating logical thought processes and developing industry specific skills that involve teamwork and project management
- Participate in contests that highlight job skill demonstration; interviewing skills; community service activities, extemporaneous speaking, and job interview
- Participate in leadership activities such as Student2Student Mentoring, National Week of Service, Officer Training, and Community Action Project

For more ideas and information, visit Tennessee SkillsUSA at https://www.skillsusatn.org/.

Using Work-based Learning in Your Classroom

Sustained and coordinated activities that relate to the course content are the key to successful work-based learning. Possible activities for this course include the following. This is not an exhaustive list.

- **Standards 1-5**| Invite an industry representative to discuss disasters and emergency preparedness.
- **Standards 6-8**| Invite industry representatives from local government and civilian response agencies for a panel discussion on emergency response organizations and personnel.
- **Standards 9-13** | Invite a local Community Emergency Response Team (CERT) representative to discuss community infrastructure related to disaster response.
- **Standards 10-18** | Invite a firefighter from the local fire hall to demonstrate and assist students with knot tying.
- **Standards 19-21** | Visit a local fire hall for ladder orientation.
- **Standards 22-32** |Invite local CERT team representatives to discuss various aspects of safety precautions, HAZMAT situations, and mock disaster drills.

For more ideas and information, visit https://www.tn.gov/education/educators/career-and-technical-education/work-based-learning.html.

Course Description

Fire Prevention provides an overview of the fire prevention techniques which are utilized by fire fighter professionals in response to various fire emergencies. Upon completion of this course, proficient students will be able to identify the magnitude of a natural or unnatural disaster and its effects on the many facets of communities as well as conduct hazard identification and learn how to control and prevent fires. This course equips students with the skills and knowledge surrounding a Community Emergency Response Team (CERT) and gives them the ability to apply those skills in mock scenarios. This course teaches skills involving ropes, knots, ground ladders, and hazard response. Standards in this course are aligned with the National Fire Academy Fire and Emergency Services (FESHE) model.*

Program of Study Application

This is the second course in the *Fire Management Services* programs of study. For more information on the benefits and requirements of implementing these programs in full, please visit the respective career cluster website, Law, Public Safety, Corrections, & Security at https://www.tn.gov/education/educators/career-and-technical-education/career-clusters/cte-cluster-law-public-safety.html

Course Standards

Disasters and Emergency Preparedness

1) Outline the features of a disaster. Differentiate among environmental and natural disasters, acts of terrorism, and technological hazards, citing real-life examples found in news media, and describe how each impacts the health and stability of communities. Accurately identify appropriate local, state and national agencies that could respond in each type of disaster.

2) Articulate important historical events and milestones (such as the creation of the Department of Homeland Security) impacting evolution of present-day emergency preparedness systems in the United States. Use a timeline or other graphic to illustrate the major developments from the colonial period to today, citing specific textual evidence from research.

3) Using federal, state and local government websites, research the statues, laws, and regulations related to emergency preparedness. Describe the hierarchy of those regulations in relation to the agencies and populations they govern, citing specific textual evidence from research.

4) Define the national fire problem and the role of fire prevention. Describe the history and philosophy of fire prevention and apply these concepts to current events. (FESHE Fire Prevention 1, 8)

5) Create a public service announcement, community education portfolio, presentation, fact sheet series, or guidebook for citizens of the local community that describes important steps to prepare for a disaster. Topics should include, but are not limited to:
    a. Identifying community laws and policies
    b. Understanding community alerts and warning systems

c. Establishing priorities accurately
d. Devising a communication plan involving community members, local private and public agencies, healthcare facilities, local HAM radio clubs, and emergency agencies
e. Locating available resources
f. Recognizing the characteristics and potential consequences of safety hazards
g. Developing an evacuation plan
h. Outlining components of practice drills
i. Describing process of "sheltering in place"

Emergency Response Organizations and Personnel

6) Compile a list of federal, state, and local government and civilian response agencies and organizations involved in disaster response (such as Medical Reserve Corp and Federal Emergency Management Agency. Analyze the structure of the relationships among organizations and describe how each organization operates when responding to disasters. Accurately describe Incident Command Systems and how they coordinate relief efforts within and between agencies.

7) Identify and describe fire prevention organizations and associations and list the roles and responsibilities of fire prevention personnel. Write an informative paper or develop an infographic identifying entry requirements and qualifications for Fire Marshal, Plans Examiner, Fire Inspector, Fire and Life Safety Educator, and Fire Investigator. Incorporate the secondary courses that will prepare students to be successful in these positions. (FESHE Fire Prevention 2,6,7)

8) Investigate and report on the functions of the fire prevention bureau. Include an analysis of laws, rules, regulations, and codes and determine those relevant to fire prevention and the authority which has jurisdiction in your region. (FESHE Fire Prevention 3, 4)

Hazard Identification/Control and Fire Prevention

9) Explain how a disaster can impact a community's infrastructure. Identify hazards associated with structural damage from disasters and explain, using a graphic illustration, how they can be addressed in an emergency situation.

10) Identify hazards associated with fires and utilities in a disaster. Outline the nine steps of a CERT Size-up when looking for fire or utility hazards, and locate vulnerable areas in a school or other community building. Prepare a plan for dealing with these hazards, including guidelines for maintaining personal safety. Compile information on all public and private companies and/or agencies in the area available to assist with hazard control.

11) Create a disaster guide for community members in a specific public building, outlining the following:
    a. primary and secondary exits from the building
    b. designated gathering places in the event of an emergency; procedures to be followed
    c. other essential instructions or information

12) For a given structure in the community, create a map to identify where all firefighting equipment and utility shut-offs are located throughout the building. Conduct a research project on fire hazards and safety equipment that culminates in the creation of an informational essay describing fire chemistry, the classification of fires, selection of the proper fire extinguisher, and fire suppression safety.

13) Follow procedures to work safely around materials. Demonstrate fire inspection practices and procedures including data collection and analysis and plans review for fire and life safety education practices. Locate and select the appropriate tools and equipment. Critique the readiness of the tools, use the tools to accomplish the desired tasks, and then return the tools and accessories to their proper storage locations. (FESHE Fire Prevention 5)

Ropes and Knots

14) Compare and contrast a life-safety rope and a utility rope, addressing applicable NFPA standards, rope materials, strength, and construction. Demonstrate the ability to identify different types of rope, (i.e., a life-safety rope and a utility rope), and demonstrate proficiency in coiling and uncoiling ropes.

15) Articulate the importance of maintaining, caring for, and inspecting ropes; perform skills related to NFPA standards for inspecting, cleaning, and storing both types of rope. Determine conditions that would warrant a rope being taken out of service.

16) Explain the following components when preparing to tie knots:
    a. Parts of a rope
    b. Considerations in tying knots
    c. Elements of a knot
    d. Characteristics of knots commonly used in fire service
    e. Rope hardware

17) When given the proper size and amount of rope, properly demonstrate tying the following knots:
    a. Tie the single overhand knot
    b. Tie a bowline
    c. Tie a clove hitch
    d. Tie a clove hitch around an object
    e. Tie a figure eight
    f. Tie a figure eight on a bight

18) Identify tools and equipment used in the practice of hoisting and incorporating safety precautions. Demonstrate proficiency in identification related to the following:
    a. Hoisting an axe
    b. Hoisting a pike pole
    c. Hoisting a roof ladder
    d. Hoisting a dry hoseline
    e. Hoisting a power saw

Ground Ladders

19) Investigate the guidelines as stated by NFPA 1001 for firefighters concerning the use of ground ladders. Describe the types, parts, and functions of the ladder, materials used for ladder construction, and procedures for inspecting, cleaning, and maintaining ladders in a written explanation.

20) Write a mock scenario in which a ground ladder would be used by firefighter personnel. Identify the type of ladder required, the procedure for moving the ladder into place, the procedure for lifting and lowering the ladder, the procedure for climbing the ladder, and safety precautions when using the ladder.

21) Understand the concepts of and perform the following skills with 100% accuracy related to ground ladders:
    a. Ladder Carry: one-firefighter low-shoulder method
    b. Ladder Carry: two-Firefighter low-shoulder method
    c. Ladder Carry: three-firefighter low-shoulder method
    d. Tie the Halyard
    e. Raise a ladder - one firefighter method single ladder
    f. Raise a ladder - one firefighter method extension ladder
    g. Raise a ladder - two firefighter flat raise
    h. Raise a ladder - two firefighter beam raise
    i. Raise a ladder - three- or four-two firefighter flat raise
    j. Deploy a roof ladder – one firefighter method
    k. Pivot a ladder - two firefighter method
    l. Shift a ladder - one firefighter method
    m. Shift a ladder - two firefighter method
    n. Leg lock on a ground ladder
    o. Assist a conscious victim down a ground ladder
    p. Assist an unconscious victim down a ground ladder

Forcible Entry

22) Outline the procedures, safety precautions, use of tools, and special considerations involved in the breaching of walls and floors when entry in a door or window is not possible. Perform the skills related to forcible entry with 100% accuracy as outlined by the following:
    a. Forced entry through an inward-swinging door – two-firefighter method
    b. Forced entry through an outward-swinging door - wedge-end method
    c. Forced entry using the through-the-lock method
    d. Forced entry using the through-the-lock method with the K-tool
    e. Forced entry using the through-the-lock method with the A-tool
    f. Forced entry through padlocks
    g. Forced entry through a double-hung window
    h. Forced entry through a glass pane window

Salvage, Overhaul, and Cause

23) Examine the procedures surrounding an overhaul operation, including potential threats to firefighters, safety measures to be followed, strategies for locating hidden fires, and tools used during an overhaul. Develop a standard of practice that every firefighter must follow surrounding overhaul procedures.

24) Understand the following concepts of and demonstrate proficiency related to salvage and loss control of a structure:
    a. Clean, inspect, and repair a salvage cover
    b. Roll a salvage cover for a one-firefighter spread
    c. Spread rolled salvage cover - one-firefighter method
    d. Fold a salvage cover for a one-firefighter spread
    e. Roll a salvage cover for a two-firefighter spread
    f. Spread a folded salvage cover for a two-firefighter balloon throw
    g. Construct a water chute without pike poles
    h. Construct a water chute with pike poles
    i. Construct a catchall

Hazardous Materials

25) Summarize the Awareness-Level and Operations-Level responsibilities surrounding hazardous materials and describe the type of personal protective equipment (PPE) that should be utilized during each. Demonstrate the skills of donning and doffing appropriate PPE.

26) Identify the respiratory protection that is required at a hazardous scene where chemical, biological, or radioactive materials are present. Identify the agencies that provide safety guidelines and limitations for each type of respiratory protection.

27) Hazmat situations increase the potential for health hazards. Explain the following types of hazards, strategies for identifying the hazard, the required PPE, health implications, and follow-up care.
    a. Thermal
    b. Radiological
    c. Asphyxiation
    d. Chemical
    e. Etiological/Biological
    f. Mechanical
    g. Illicit laboratories

28) Research the potential outcomes associated with hazardous material incidents as determined by their properties and behavior, such as physical state, vapor pressure, boiling point, vapor density, solubility, specific gravity, persistence, and reactivity.

29) Compare and contrast different types of container shapes for bulk and non-bulk packaging. Incorporate descriptions of tank or storage type, contents that might be found in the container, and placards that might be found on each container.

30) Explain the difference in the regulation of hazardous material transportation between the U.S. Department of Transportation (USDOT), Transport Canada (TC), Ministry of Communications and Transportation of Mexico, and the United Nations (UN). Identify placards, labels, and markings from each of these areas as well as other markings and colors commonly found on containers. Obtain information about a hazardous material using the USDOT's Emergency Response Guidebook (ERG):
    h. Using the U.N. Identification Number
    i. Using the material name
    j. Using the container profile
    k. Using the placard

Emergency Response Planning and Prevention

31) Investigate the guidelines governing youth CERT teams regionally and nationally. Utilizing skills and competencies from Emergency Preparedness, Disaster Medical Operations, Hazards Identification, Search and Rescue, and Disaster Psychology, work in a team to create a comprehensive school emergency preparedness student plan, in conjunction with the school administration. Identify roles and responsibilities for all team members. Compare and align guidelines with the school disaster plan, if applicable. Include information on the following:
    a. Incident Command System
    b. On-scene management
    c. Protocols for specific types of disasters and responses
    d. Communication procedures
    e. Resource management plans
    f. Drills and training
    g. National Incident Management System (NIMS) compliance, at least IS-700, IS-800, ICS-100
    h. Mobilization guidelines
    i. Forms and documentation
    j. Protocols for dealing with the media
    k. Participation in community disaster incidents beyond the school

32) Participate in a Mock Disaster Drill. Involve community emergency preparedness personnel if possible to help design and set up the scenarios for various stations and observe teams at work during the actual drill to evaluate the responses. Conduct a post drill review to collect feedback from observers and team members. Craft an informational essay of expertise and areas in need of improvement through further training. Design a plan to provide team members with that training.

Standards Alignment Notes

*References to other standards include:

- National Fire Academy Fire and Emergency Services Higher Education (FESHE): Core Curriculum. This course aligns with the eight outcomes in FESHE Fire Prevention.
- IFSTA: International Fire Service Training Association
- EMR: National Emergency Medical Services Educational Standards for Emergency Medical Responders

- P21: Partnership for 21st Century Skills Framework for 21st Century Learning
    - Note: While not all standards are specifically aligned, teachers will find the framework helpful for setting expectations for student behavior in their classroom and practicing specific career readiness skills.

**Informational artifacts include, but are not limited to, graphic organizers, brochures, posters, fact sheets, narratives, essays, and presentations. Graphic illustrations include, but are not limited, to charts, tables, graphs, rubrics, drawings, and models.