Explain principles of fire science

Level 2
Credits 1

Purpose
This unit standard is primarily for personnel whose duties involve fire and rescue response in the workplace and will also be relevant to other learners who anticipate the need to use hand-held fire extinguishers in industrial or domestic situations.

People credited with this unit standard are able to demonstrate knowledge of the basic principles of the chemistry of fire and the basic principles of the physics of fire.

Subfield Community and Workplace Fire and Emergency Management
Domain Workplace Fire and Emergency Response
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Accreditation Evaluation of documentation by NZQA and industry.

Standard setting body (SSB) Fire and Rescue Services Industry Training Organisation

Accreditation and Moderation Action Plan (AMAP) reference 0039
This AMAP can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Special notes

1 Compliance with the fire and rescue service provider’s Health and Safety policy and procedures is mandatory.

2 Definition
Fire and rescue service provider’s requirements refer to policies and procedures on safety and operation set down by each fire and rescue service employer or host organisation.
Elements and performance criteria

Element 1

Demonstrate knowledge of the basic principles of the chemistry of fire.

Performance criteria

1.1 Factors that must be present for a fire to burn are identified in terms of the triangle of fire.

1.2 The chemical chain reaction is explained in terms of its involvement in a fire.

1.3 Methods of extinguishing a fire are described in terms of the removal of fire factors in accordance with the fire and rescue service provider’s requirements.

Range cooling, removing fuel, smothering, starving, interruption of the chemical chain reaction.

Element 2

Demonstrate knowledge of the basic principles of the physics of fire.

Performance criteria

2.1 Heat and fire travel are described in terms of one practical example.

Range convection, conduction, radiation, direct burning, ember transport.

2.2 The concept of upper and lower explosive limits in relation to the combination of a flammable gas and air are explained in accordance with the fire and rescue service provider’s requirements.

2.3 Fire terms are defined in accordance with the fire and rescue service provider’s requirements.

Range flashpoint, ignition temperature, spontaneous combustion, miscibility, combustion.

Please note

Providers must be accredited by NZQA, or an inter-institutional body with delegated authority for quality assurance, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be accredited by NZQA before they can register credits from assessment against unit standards.

Accredited providers and Industry Training Organisations assessing against unit standards must engage with the moderation system that applies to those standards.
Accreditation requirements and an outline of the moderation system that applies to this standard are outlined in the Accreditation and Moderation Action Plan (AMAP). The AMAP also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

Comments on this unit standard

Please contact the Fire and Rescue Services Industry Training Organisation info@frsito.org.nz if you wish to suggest changes to the content of this unit standard.