

## FRSC –Fire Science

### FRSC 1020 - Basic Firefighter – Emergency Services Fundamentals

3.000 Credits

Prerequisites: Regular Status

This course provides the student with information on the applicable laws, policies, and standards that the Firefighter I course is designed, and how the course will be administered. This course will provide the student basic knowledge of where and how the fire service originated from the colonial periods to present day firefighting operations. The student will learn basic roles and responsibilities of a firefighter, how firefighters have to abide by and work from standard operating procedures and guidelines, and how the chain of command works and their position within it. This course provides the emergency responder with basic principles and functions of the Incident Command System. The course will provide the necessary knowledge and skills to operate within the ICS and their role within the ICS at the fire station, at a non-emergency scene, and at emergency scenes. It will provide also provide the emergency responder with knowledge on how to perform basic skills at emergency scenes that deal with infection control, cardiopulmonary resuscitation, basic first aid measures, and using an AED. Finally, it will provide the emergency responder skills and knowledge on how to recognize the presence of and the potential for a hazardous materials release, and how and who personnel should call. Upon completion of this course the student emergency responder candidate/recruit will have the basic skills and knowledge to be able to obtain a certificate of completion or become certified through the appropriate governing agency for the following:

1. Infection Control
2. CPR
3. First Aid
4. ICS-100
5. IS-700
6. NPQ - Hazardous Materials for First Responders Awareness Level

This course meets the requirements NFPA 1001 Standard for Fire Fighter Professional Qualifications and all other state, local, and provincial occupational health and safety regulatory requirements.

### FRSC 1030 - Basic Firefighter - MODULE I

5.000 Credits

Prerequisites: Regular Status

This course provides the firefighter candidate/recruit with basic knowledge and skills to perform various fire ground operations as a firefighter on emergency scenes. The candidate/recruit will learn about safety during all phases of a firefighters career, the personal protective equipment that is required for training and every emergency response, and how to properly don it for use and doff it after use. The candidate/recruit will learn about the dynamics of fire through fire behavior and how to extinguish the different phases of fires with either portable fire extinguishers or through fire suppression attacks and techniques. The candidate/recruit will also learn the three tactical priorities of Life Safety, Incident Stabilization, and Property Conservation that have to be achieved on every fireground. Basic knowledge and skills will be provided to the candidate/recruit so they can achieve the tactical priorities through various fireground operations such as: response + size-up, forcible entry, ladders, search + rescue, ventilation, water supply, fire hose, fire nozzles, fire streams, salvage, and overhaul. Upon completion of this course the student emergency responder candidate/recruit will have the basic skills and knowledge to be able to obtain a certificate of completion or become certified through the appropriate governing agency for Module I. This course meets the requirements NFPA 1001 Standard for Fire Fighter Professional Qualifications and all other state, local, and provincial occupational health and safety regulatory requirements.

### FRSC 1040 - Basic Firefighter - MODULE II

3.000 Credits

Prerequisites: Regular Status

This course builds from the skills and knowledge in Module I and provides the knowledge and skills to support the fireground techniques learned in the previous courses. The firefighter will learn various uses of ropes + knots and how to hoist fire fighting tools and equipment. The fire fighter will also gain the knowledge and skills of building construction principles that will be used throughout their firefighting career to identify building conditions such as: fire spread and travel, how and where to ventilate, indications of potential building collapse, etc. The firefighter will learn survival techniques that will be used throughout their career to help keep themselves safe and how to rescue themselves or another firefighter. Firefighter rehabilitation will be discussed during this course, so that the firefighter will know how and when to properly rehab themselves before, during, after an emergency response. Knowledge of fire suppression systems will be discussed, so that the firefighter will have a basic understanding of the components of a fire detection, protection, and suppression system. Basic cause determination will be discussed so that firefighters will be aware of observations during various phases of fireground operations. Finally, to complete the Firefighter I program the firefighter will participate in the following live fire scenarios in order to complete the objectives of the program.

1. Exterior Class A Fire
2. Interior Structure Attack Above Grade Level
3. Interior Structure Attack Below Grade Level
4. Vehicle Fire
5. Dumpster Fire

Upon completion of this course the student emergency responder candidate/recruit will have the basic skills and knowledge to be able to obtain a certificate of completion or become certified through the appropriate governing agency for NPQ Fire Fighter I. This course meets the requirements NFPA 1001 Standard for Fire Fighter Professional Qualifications and all other state, local, and provincial occupational health and safety regulatory requirements.

### FRSC 1100 - Introduction to the Fire Service

3.000 Credits

Prerequisites: Regular Status

This course is a survey of the philosophy and history of Fire Protection, loss of property and life by fire, review of municipal fire defenses and the organization and function of the federal, state, country, city and private fire protection. Includes introduction to: fire technology education and the firefighter selection process; fire protection career opportunities; public fire protection; chemistry and physics of fire; public and private support organizations; fire department resources; fire department administration; support functions; training; fire prevention; codes and ordinances; fire protection systems and equipment; emergency incident management; and emergency operations.

### FRSC 1110 - Fire Administration – Supervision and Leadership

3.000 Credits

Prerequisites: Regular Status

This course provides the necessary knowledge and skills for an emergency responder to become a successful fire officer. The student will learn how to become a responsible leader and supervisor to a crew of firefighters, how to manage a budget for the fire station, understand standard operating procedures, and be able to manage an incident. Also, an understanding of basic fire prevention methods, fire and building codes, and records systems will be covered throughout the course. Upon completion of this course the student emergency responder candidate/recruit will have the basic skills and knowledge to be able to qualify for a certificate of completion or seek certification through the appropriate governing agency for the following:

1. NFA Leadership I
2. NFA Leadership II
3. NFA Leadership III

This course meets the requirements NFPA 1021 Standard for Fire Officer Professional Qualifications and all other state, local, and provincial occupational health and safety regulatory requirements.

**FRSC 1121 - Firefighting Strategy and Tactics**  
3.000 Credits

Prerequisites: Regular Status

This course presents the principles of applying fire department resources to mitigate a fire or related emergency. General topics include principles of firefighting, size up, engine company operations, hose line selection and placement, water supply, standpipe and sprinkler operations, ladder company operations, forcible entry, ventilation and search and rescue. Specific-fires reviewed will include private dwellings, multiple dwellings, commercial buildings, high-rise structures, buildings under construction, structural collapse, flammable liquid and gas fires and waterfront fires.

**FRSC 1132 - Fire Service Instructor**  
4.000 Credits

Prerequisites: Regular Status

Students will learn to analyze jobs and information, then prepare and present related training. Emphasis is placed on planning, organizing, presenting, and testing, using methodologies appropriate to the subject. Topics include orientation to emergency services instruction, communication, planning and analysis, objectives, learning, assessment, methods of instruction, instructor materials, media, training related group dynamics, classroom management, the legal environment, and NPQ Fire Instructor I. Students will have numerous hands-on opportunities to apply what they learn. Successful completers of FRSC 1132 are qualified to test for the National Professional Qualification (NPQ) Fire Instructor I Exam.

**FRSC 1141 - Hazardous Materials Operations**  
4.000 Credits

Prerequisites: Regular Status

This course provides emergency responder personnel with the information to respond safely, limit possible exposure to all personnel, and to provide information to the proper authorities as being a primary goal while reacting in the defensive mode of operation. The first responder operations level responsibilities are recognition and identification of a hazardous material scene, the gathering of information, the notification of the proper authorities, the isolation of the area by setting perimeters/ zones, possible evacuation, protection by initiating the incident management system, emergency decontamination, and performing defensive actions only. Even though the first responder is a member of an emergency response service, they are not trained in specialized protective clothing or specialized control equipment. Thus, the first responder is not a member of a hazardous materials response team. This course meets the requirements of NFPA 472 - Professional Competence of First Responders to HazMat Incidents at the Operations Level. This course also meets the requirements of OSHA 29 CFR 1910.120, EPA, USDOT, and all other appropriate state, local and provincial occupational health and safety regulatory requirements. Also required as prerequisite: NPQ FF I and NPQ Hazardous Materials Awareness Level

**FRSC 1151 - Fire Prevention and Inspection**  
4.000 Credits

Prerequisites: Regular Status

Emphasis is placed on the shared responsibility of all fire service personnel to prevent fires and fire losses by survey of fire prevention activities, conducting basic fire prevention inspections,

practicing life safety codes, review of local and state laws regarding fire inspection, and review of applicable codes and standards. Topics include: code administration, inspection, use and occupancy, building limitations and types of construction, fire resistive construction elements, installation of fire protection systems, mean of egress, interior finish requirements, general fire safety provisions, maintenance of fire protection systems, means of egress maintenance for occupancies, hazardous materials, flammable liquids and aerosols, detonation and deflagration hazards, hazardous assembly occupancies, other storage and processing occupancies, compressed gases and cryogenic liquids, pesticides and other health hazards, and using referenced standards. Successful completion of FRSC 1151 qualifies individuals to test for the National Professional Qualification (NPQ) Inspector Level-I examination

**FRSC 1161 - Fire Service Safety and Loss Control**  
3.000 Credits

Prerequisites: Regular Status

This course will provide the necessary knowledge and skills for the emergency responder to understand occupational safety and health and be able to develop safety programs. The course starts with an introduction to occupational safety and health and covers the history, national agencies that produce injury and fatality reports, and efforts that have been made to address safety and health problems in emergency service occupations. The course will review safety related regulations and standards and discuss how to implement them through risk management processes. There will be lectures and discussions on pre-incident safety, safety at fire emergencies, safety at medical and rescue emergencies, safety at specialized incidents, and post-incident safety management. Personnel roles and responsibilities will be covered, so that knowledge can be gained on the relationship to the overall safety and health program by the different responding and administrative personnel at emergency scenes. Lectures and discussions on how to develop, manage, and evaluate safety programs will be covered to provide general knowledge and basic skills on occupational health and safety programs. Finally, information management and various other special topics will be covered to gain knowledge on the legal, ethical, and financial considerations that programs need to be aware of and how to collect the data and report it.

**FRSC 2100 - Fire Administration Management**  
3.000 Credits

Prerequisites: Regular Status

This course will provide the necessary knowledge and skills for the emergency responder to become a diverse leader and manager in their department. The course starts with the history of the fire service, which focuses on the historical events that have forged the fire service today. Discussions on preparing for the future are designed to provide information to develop a game plan for personal success. Leadership and Management principles will be taught to blend the academics of leadership and management research into what occurs in the fire service organization on a daily basis. Leadership styles will be discussed to help understand how to lead and manage and, as important, why it is done. The course will take an insightful look into how people handle change personally and organizationally. Discussions on ethics will be focused on the elements critical to ethical leadership and management practices. The course will explore the elements of team building and provide a depth of understanding how to blend various styles and personalities to get the most from people. Discussions on managing emergency services will target budgeting and personnel management the support elements that are so vital to every organization. Quality of the fire service will also be looked at for methods of quality improvement and their applications to improve the services delivered to citizens everyday. An in-depth overview of the changes in disaster planning

and response since 9-11, and includes ways to help with community evaluation and preparedness processes. Finally, shaping the future will explore the possibilities of what may occur in the fire service and how you can play an important role in helping to shape the fire service of the future.

FRSC 2110 - Fire Service Hydraulics

3.000 Credits

Prerequisites: Regular Status

This course begins with the history and theories of the use of water for fire extinguishment then moves to practical application of the principles of hydraulics in water systems and on the fire ground. Topics include water at rest and in motion, velocity and discharge, water distribution systems, fire service pumps, friction loss, engine and nozzle pressures, fire streams, standpipe systems, automatic sprinkler systems, firefighting foams, and the clip board friction loss system.

FRSC 2120 - Fire Protection Systems  
3.000 Credits

Prerequisites: Regular Status

A review of fire detection and protection systems including: automatic sprinkler systems, portable fire extinguishers, restaurant/kitchen systems, special hazard systems, detection systems, and control systems. The applicable laws, codes and standards will be introduced along with regulatory and support agencies. Specific topics include: introduction to fire protection systems, water supply systems for fire protection systems, water-based suppression systems, non-water-based suppression systems, fire alarm systems, smoke management systems, and portable fire extinguishers.

FRSC 2130 - Fire Service Building Construction  
3.000 Credits

Prerequisites: Regular Status

Presents building construction features from the perspective of the fire service with emphasis placed on the use of building construction information to prevent and reduce fire fighter and civilian deaths and injuries. Topics include principles of building construction, building construction classification, building construction hazards and tactical considerations, structural loads and stresses, structural building components and functions, fire resistance and flame spread, building codes, structural failure and firefighter safety, and firefighter safety in structural and wildland firefighting.

FRSC 2141 - Incident Command  
4.000 Credits

Prerequisites: Regular Status

The Incident Command course is designed to illustrate the responsibilities to use, deploy, implement, and/or function within an Incident Command System (ICS) as well as functioning within multi-jurisdictions incident under the Incident Management System (IMS). The course emphasizes the need for incident management systems, an overview of the structure and expandable nature of ICS, an understanding of the command skills needed by departmental officers to use ICS guidelines effectively, and scenario practice on how to apply ICS and IMS. The National Incident Management System (NIMS) will illustrate and provide the consistent nationwide template to enable all government, private-sectors, and non-governmental organizations to work together during virtual all domestic incidents. These course competencies will cover those objectives entailed in NIMS 100, 200, 700, and 800.

FRSC 2170 - Fire and Arson Investigation  
4.000 Credits

Prerequisites: Regular Status

Presents an introduction to fire investigation. Emphasis is placed upon: fire behavior, combustion properties of various materials sources of ignition, and investigative techniques for structures, grassland, wildland, automobiles, vehicles, ships, and other types of fire investigation, causes of electrical fires, chemical fires, explosive evaluations, laboratory operation. Techniques used in fire deaths and injuries, arson as a crime, other techniques, State and Federal laws, and future trends in fire investigative technology.