

COURSE OUTLINE **Industrial Firefighter I**

Course Description

FS 101. Industrial Firefighter I. 5 hours credit. This course will enable the student to acquire the knowledge and skills needed to perform the duties of a brigade member safely and correctly. The student will recognize risk factors commonly occurring in the industry setting and apply appropriate safety measures, including the competent use of equipment. The student will apply industry specific standard operating procedures and guidelines. This course is designed to meet the minimum requirements set forth by the National Fire Protection Association 1081 Standard.

Course Relevance

This course will prepare the student for roles and responsibilities associated with being a member of an industrial fire brigade.

Required Materials

National Fire Protection Association, (2009). *Industrial fire brigade: principles and practices*. (1st ed.). Sudbury, MA: Jones and Bartlett Publishers.

Learning Outcomes

The intention is for the student to be able to

1. Demonstrate competent use of equipment used by industrial fire brigades.
2. Recognize risk factors associated with emergencies commonly found in industrial settings.
3. Apply safety initiatives learned in the classroom to practical applications.
4. Understand the importance of standard operating procedures and standard operating guidelines.
5. Demonstrate the ability to perform practical skills outlined in the National Fire Protection Association Standard 1081.

Learning PACT Skills that will be DEVELOPED and/or documented in this course

Through the student's involvement in this course, he/she will develop his/her ability in the following PACT skill areas:

Technology Skills

1. Discipline-specific technology
 - Through the use of discipline-specific technology the student will demonstrate practical skills required in meeting the competencies of the National Fire Protection Association Standard 1081.

Personal Development Skills

1. Interpersonal interaction
 - Through a series of practical skill applications the student will participate as part of a team and learn the value of teamwork.
2. Personal management

- Through the observation and collection of information the student will be able to effectively mitigate emergency situations.

Major Summative Assessment Task(s)

These learning outcomes and the Learning PACT skills will be demonstrated by

1. Completing a summative field-related exercise, including the required skills necessary to meet the minimum standards of an industrial fire brigade member, as set forth by the National Fire Protection Association Standard 1081.

Course Content

- I. Skills/Competencies – Actions that are essential to achieve the course outcomes:
 - A. Demonstrate the ability to operate within the Incident Command System
 - B. Demonstrate the competent use of foam fire streams
 - C. Develop an incident action plan
- II. Themes – Key recurring concepts that run throughout this course:
 - A. Knowledge of equipment used by industrial fire brigades
 - B. Knowledge of products of combustion
- III. Issues – Key areas of conflict that must be understood in order to achieve the intended outcome:
 - A. Fire brigade member safety
 - B. Develop effective suppression strategies
- IV. Concepts – Key concepts that must be understood to address the issues:
 - A. Knowledge of the Incident Management System
 - B. Knowledge of standard operating procedures and guidelines
 - C. Identify effective suppression tactics

Learning Units

- I. Brigade member qualifications and safety
 - A. Roles and responsibilities
 - B. Safety and health
- II. Standard operating procedures and guidelines
 - A. Development of standard operating procedures
 - B. Implementation and revision of standard operating procedures and guidelines
 - C. Post incident analysis
- III. Fire service communications
 - A. Communication centers
 - B. Radio systems
 - C. Incident reporting systems
- IV. Incident management system
 - A. Characteristics
 - B. Organization
 - C. Concepts and terminology

- D. Implementation
- E. Working within the incident management system

- V. Fire behavior
 - A. Fire tetrahedron
 - B. Chemistry of combustion
 - C. Products of combustion
 - D. Heat transfer
 - E. Characteristics of liquid fuel fires
 - F. Characteristics of gas fuel fires
 - G. Classes of fire
 - H. Phases of fire

- VI. Building construction
 - A. Types of construction materials
 - B. Types of construction
 - C. Building components

- VII. Portable fire extinguishers
 - A. Classification of fire extinguishers
 - B. Extinguishing agents
 - C. Extinguisher designs
 - D. Extinguisher characteristics
 - E. Care of fire extinguishers

- VIII. Tools and equipment
 - A. Tool functions
 - B. Tool use
 - C. Tool staging
 - D. Tool maintenance

- IX. Ropes and knots
 - A. Rope types and materials
 - B. Technical rescue hardware
 - C. Knots
 - D. Hoisting

- X. Response and size-up
 - A. Response
 - B. Size-up
 - C. Incident action plan

- XI. Forcible entry
 - A. Forcible entry situation
 - B. Forcible entry tools
 - C. Door size-up

- D. Window size-up
- E. Locks
- F. Breaching walls and floors
- G. Forcible entry salvage

XII. Ladders

- A. Functions
- B. Types of ladders
- C. Inspection, maintenance, and service testing
- D. Safety
- E. Use of portable ladders

XIII. Search and rescue

- A. Outdoor process area size and arrangement
- B. Search techniques
- C. Search safety
- D. Rescue techniques

XIV. Ventilations

- A. Benefits of ventilation
- B. Factors affecting ventilation
- C. Construction considerations
- D. Tactical priorities
- E. Types of ventilation
- F. Special considerations
- G. Backdraft and flashover considerations

XV. Water supply

- A. Water sources
- B. Industrial water systems
- C. Fire hydrants

XVI. Fire hose, nozzles, and streams

- A. Fire hoses
- B. Hose appliances and tools
- C. Hose rolls
- D. Fire hose evolutions
- E. Nozzles

XVII. Foam

- A. Fundamentals of foam
- B. Foam concentrates
- C. Characteristics
- D. Foam equipment
- E. Foam tactics

XVIII. Safety and survival

- A. Safe operating procedures
 - B. Survival procedures
 - C. Air management
 - D. Rehabilitation
 - E. Critical incident stress
- XIX. Salvage and overhaul
- A. Scene lighting
 - B. Salvage techniques
 - C. Overhaul techniques
- XX. Rehabilitation
- A. Factors, cause, and need
 - B. Types of incidents
 - C. Tank farm fires and flammable or gas fire
 - D. Benefits of rehabilitation
- XXI. Fire suppression
- A. Offensive vs. defensive operations
 - B. Operating hose lines
 - C. Protecting exposures
 - D. Transport fires
 - E. Flammable liquid fires
 - F. Flammable gas characteristics
 - G. Fires involving electricity
 - H. Preserving evidence
- XXII. Pre-incident planning
- A. Plan development
 - B. Tactical Information
 - C. Occupancy considerations
 - D. Prevention
- XXIII. Assisting special rescue teams
- A. Types of rescues encountered by brigade members
 - B. Operation guidelines and procedures
 - C. Pre-incident operations
 - D. Post incident duties
- XXIV. Terrorism awareness
- A. Potential targets and tactics
 - B. Agents and devices
 - C. SLUDGE and Triple Bs
 - D. Operations
- XXV. Fire detection, protection and suppression systems

- A. Fire alarm and detection systems
- B. Fire suppression systems

XXVI. Fire cause determination

- A. Causes of industrial fires
- B. Determining cause and origin
- C. Observations during fire ground operations
- D. Securing the property
- E. Incendiary fires

XXVII. Fire brigade leadership

- A. Functions of a leader
- B. Personnel issues
- C. Mutual aid
- D. Safety
- E. Preplanning
- F. Administrative issues
- G. Investigations

Learning Activities

The students will be engaged in classroom interaction and field applications.

Grade Determination

The student will be evaluated through written exams, skills proficiency assessments, and other methods of evaluation at the discretion of the instructor.