



राजस्थान आई.एल.डी. कौशल विश्वविद्यालय  
**RAJASTHAN IIT SKILLS UNIVERSITY**

## **FACULTY OF SECURITY AND SURVEILLANCE**

**NSQF LEVEL SCHEME**

**SECTOR : FIRE AND SAFETY**

**PROGRAMME**

**B.VOC IN FIRE TECHNOLOGY AND INDUSTRIAL  
SAFETY MANAGEMENT**

**NSFQ LEVEL 7**

**REGULATION**

**SEMESTER 1<sup>ST</sup>**

## **Semester Wise-Syllabus**

### **Skill Components (Theory & Practical)**

## Course Name : B. Voc. in Fire Technology and Industrial Safety Management

Semester 1<sup>st</sup>

## Skill Component

Code	Subject Type	Subject	Credits				Eose (Hrs.)		
			Theory	Practical	Self/Industry/Project	Total Credits	T	P	S
<b>Skill Component (Location : Institute)</b>									
	SC	Fire Engineering Science	2	1	0	3	3	1	0
	SC	Fire Protection & Fire Fighting Appliances	2	1	0	3	3	2	0
	SC	Fire Fighting Process	1	3	0	4	3	3	0
	SC	Fire Service Administration	1	1	0	2	3	1	0
<b>(OJT)/Qualification Packs) Location: Industry Partner)</b>									
Internship/OJT/ Drill Practical			0	0	6	6	0	0	0
<b>TOTAL</b>			<b>6</b>	<b>6</b>	<b>6</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>

## Skill Subjects

## Skill Component -I : Fire Engineering Science

Component	Unit (Module)	Subunit (Session)	Learning objective	Duration in hour	Credit
Theory Demonstration Practical	Chemistry of Fire	(1) Basic Concept (2) Chemical Reaction (3) Heat Formation and Heat of Combustion (4) Mechanism of Combustion (5) Flash Point, Fire Point. (6) Fire Triangle, Components of Fire. (7) Fire Tetrahedron, Chain Reaction. (8) Spread of Fire, Extinction of Fire. (9) Back Drought, Delayed Back drought	Understanding basic principles of Fire & Safety Engineering.	15	3
Theory Demonstration Practical	Electrical Fire	(1) Sources of Electricity (2) Fuse short circuit (3) Common causes of Electric Fire (4) Fire Fighting measures for Electric Fire	Causes of Electrical Fire & Its Prevention.	05	
Theory	Hydraulics	(1) (1) Water Pressure And Weight (2) Water weight and water per cu. Ft (3) Friction loss of water	Usage of Water for Extinguishing Fire	10	
Theory Demonstration Practical	Fire Extinguisher	Wet chemical powder Fire Extinguishers (2) Water CO <sub>2</sub> Gas Cartridge Fire Extinguishers (3) Pressure Fire Extinguishers (4) Foam Type Fire Extinguishers (5) Dry Chemical Powder Fire Extinguishers (6) CO <sub>2</sub> Gas Type Fire Extinguishers (7) Operation, Care, Maintenance and Refilling of Extinguisher	To Familiarize with various types of Fire Extinguishers.	10	
Theory	Water Supply & Water Relay system	(1) Sources of Water, (2) Type Of Hydrant, (3) Care And Maintenance Of Hydrants, (4) Types of Water Relay System & Its Advantages and Disadvantages	To Familiarize with usage of water resources & Hydrants for Extinguishing Fire.	5	

## Skill Component -II :- Fire Protection and Fire Fighting

Component	Unit (Module)	Subunit (Session)	Learning objective	Duration in hour	Credit
Theory Demonstration Practical	Building Design	(1) General Requirement of Building Design in Fire Prevention (2) Wall, Roofs, Basements, Floors and Openings (3) Electrical Installations, (4) Adopting Building for other Purpose (5) Access for Fire Appliances (6) Control of Smoke and Hot Gases (7) Escape from Buildings (8) Stores and other Buildings	<i>Fire protection</i> engineering is the application of science and engineering principles to <i>protect</i> people and their environment from destructive <i>fire</i> , which includes: analysis of <i>fire</i> hazards. Mitigation of <i>fire</i> damage by proper <i>design, construction, arrangement,</i> and use of <i>buildings</i> .	10	3
Theory Demonstration Practical	Installation of Fire Protection Systems in Buildings	(1) Introduction of Sprinkler System and their Care and Maintenance. (2) Elementary requirements of Drenchers, (3) Rising Mains (4) Hose Reel and Down-comer (5) Fire Alarms System.	Understanding their scope of authority and where that authority is derived from and successfully identifying fire and life safety hazards associated with occupancies.	10	
Theory	Rural fire	(1) Difficulties of fire fighting in rural (2) Combustible of rural fire (3) Causes of rural fire (4) Method of firefighting.	<i>Fire</i> and Life Safety Educators are invited to speak at a variety of venues. Careful planning can make the difference between an excellent visit and a mediocre and Accustomed with different fire situations and fire fighting using extinguishers.	10	
Theory	Aircraft Fire	(1) Design and construction of Airport, (2) Safety Measures of Airport, (3) Causes of fire in Aircraft and there control measures, (4) Emergency plan at Airport.	Able to offer a range of courses to the wider <i>aviation</i> industry. ... The <i>course</i> aims to provide the technical knowledge and practical skills in fire fighting & rescue operation. Plan and survey Airport & Aircraft, port and ship for rescue system and fire fighting system on it.	10	

<b>Theory</b>	<b>Ship and Dockyard Fire</b>	(1)Ship construction and there types, (2) Fire protection on board ship, (3) Fire Fighting System at Dock yard, (4) Fire Plan and Diagram.	-do-	5	
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## Skill Component -III : Fire Fighting Process

Component	Unit (Module)	Subunit (Session)	Learning objective	Duration in hour	Credit
Theory Demonstration Practical	Small Gears	(1) Introduction of Small Gears (2) Breaking gears (3) Cutting gears (4) Rescue gears (5) Transport gears (6) Miscellaneous (7) Turning over gears (8) Care and Maintenance of small gears.	<b>Small gear</b> is the term commonly used in <b>fire service</b> when referring to a miscellany of tools and general- <b>purpose</b> tool that is frequently used in turning over and pulling operations Identify and use of small and special gears.	05	4
Theory Demonstration Practical	Hose and Hose Fitting	(1) Delivery hose (2) Delivery hose coupling (3) Suction hose coupling (4) Branches and Nozzle (5) Monitors (6) Collecting Breeching (7) Dividing Breeching (8) Adapters (9) Wrenches (10) Hose Ramps	<b>Learning Outcomes</b> Recognize the standard terminology in relation to <b>hose</b> .	10	
Theory Demonstration Practical	Foam and Foam making Equipment	(1) Types of Foam compound (2) Foam making equipment (3) Working procedure of equipment (4) Description part of Foam making equipment (5) Care and maintenance of Foam Equipment (6) Storage of Foam compound.	-do-	10	
Theory Demonstration Practical	Ladders	(1) Hook ladder (2) Extension ladder (3) Escape T.T.L./Snorkel Ladder (4) Care, maintenance, standard test ladder.	Methods of using ladder in practical field.	10	
Theory Demonstration Practical	Pump and Primers	(1) Introduction and Functions of Pumps (2) Types of Pumps (Force Pump, Lift pump, Centrifugal pump) (3) Care & Maintenance of Pumps. (4) Introduction and functions of Primers. (5) Types of Primers.	Select and prepare the hydrant and pump system for proper application.	10	

**Skill Component -IV : Fire Service Administration**

Component	Unit (Module)	Subunit (Session)	Learning objective	Duration in hour	Credit
Theory	Disciplined	(1) Introductions (2) Importance of discipline (3) General Principals of discipline. (4) Essential of Discipline and Outward Signs.	Apply safe working practices.	10	2
Theory Demonstration Practical	Watch room Procedure	(1) Identification of Communication requirement of Fire Service, (2) Control Room, Equipment Station, (3) Turn out Area, Topography and Telephone Call Area, Mobilizing boards and maps. (4) Radio Communication and use of VHF sets. (5) Log, Occurrence book and Incident Reporting.	Identify communication system in different organization and their scope of use.	10	
Theory	Fire Service Organisation	(1) Ranks and appointment in Fire Services (2) Administration of State/City Fire Services (3) Maintenance of Fire Station (4) Responsibilities of Fire Station In charge (5) Documentation at Fire Station	Plan and execute fire station administration.	10	
Theory	Practical Fireman ship	(1) Quality of a Good Fireman (2) Duties of Fireman (3) Basics of Fire Fighting	-do-	10	
Theory Demonstration Practical	Special Service call	(1) Rescue Operations from Sewers, Gas Leakage at Industrial Sites, Wells, Rivers, Ponds, Collapsed Buildings, Road Accident and Elevators. (2) Fireman Lifts	-do-	5	

**Objective:- To Train an individual in handling Fire Safety Equipment and Enable him/her to function as a Fire Technician.**

**Ref. Books:-**

Agni Suraksha	-	Mr. N. K. Verma
Industrial safety health & Environment Management System	-	Mr. R.K Jain
Industrial safety management and Health	-	Mr. M. K. Tarafdar
Industrial Safety	-	Mr. Misti

**Scheme of Examination: - 1 Semester (6 Months)**

**Learning outcome:-After successful completion of Fire Technician course, an individual will be capable of performing the duties of Fire Technician/Fireman. He/she will be able to minimize occurrence of Fire Incidents and assist in minimizing the losses from Fire.**