



राजस्थान आई.एल.डी. कौशल विश्वविद्यालय
RAJASTHAN ILD SKILLS UNIVERSITY

FACULTY OF SECURITY AND SURVEILLANCE

NSQF LEVEL SCHEME

SECTOR: FIRE AND SAFETY

PROGRAMME INTRODUCTION AND GUIDLINE

AN INTRODUCTION

ABOUT FIRE TECHNOLOGY

Fire is one of the simplest forms of energy known to man, ever since Stone Age, when man learned to use it; it has been used for a variety of purpose. In the early days it was used to safeguard one from cold, as a source of light and as a medium of cooking food. Today, we see fire being used for a number of purposes. However, fire, like many other boons, is hazardous. This necessitates due care in its use. Valuable lives are lost every year due to inadvertent fires. Similarly, property' worth crore of rupees is destroyed by uncontrolled fire incidents. A number of industrial units offer huge losses due to fire. Hence, it is necessary to understand the mechanism of fire and methods of prevention of losses from it, for the safe working in any industry.

The analysis of major fires, which broke out in office type building, the main causes finally identified, wise due to electrical short circuit/ overheating of electrical equipment and open flame/un extinguished smoking materials. In industrial buildings, in addition to electricity sparks / impact/ friction and poor housekeeping are also identified as causes of major fire hazards. So while planning the fire prevention measures for any occupancy, it is accessory to study in details the possibilities of fire due to all these sources and the preventive measures required. At last, know the fact that many valuable lives & crore of rupees of material are lost in fire accidents in all over die world.

This has created demand of trained fire & safety engineering & fighters. This has also created wide business potential as well as growth in overall fire protection industry as a whole. Overall, the demand for highly trained Fire Protecting Engineers, Faculty of Security and Surveillance presenting Fire & Safety Technology to join the new profession.

The systematic growth of industry mainly was in large sectors as well as Government sectors, but in recent times, the private sector has also shown tremendous growth due to accurate Fire law provisions and their implementations by authorities in each city, town etc. In future, the Government will enforce strict implementation of Fire codes in commercial industrial and other institutional sectors.

Fire Technology and Industrial Safety, as a career option is fast catching up with the students in India.

Whereas in abroad, Fire Technology and Industrial Safety is an integral part of most of University programs. Introduction of Fire Technology and Industrial Safety courses is infect, an index of industrial growth.

A rough assessment of the Industrial & Government demand puts the requirement at over 12,000 fire and safety personnel every year. The stage is similar to the advent of the computer revolution 7 years back. Fire & Safety Technology is a field to which all aspects of Science & Technical knowledge pertaining to fire & safety is linked. It involves study of subjects that deals with the designing of safer fire resistant equipments and plants; in depth understanding of the Science of Fire & Safety; its hazards and control measures in various associated engineering subjects; Managerial functions which aid in managing a fire fighting along with other psychological grooming required to make a self reliant Fire Engineer/ Fire Officer.

Gulf is the biggest fire prone area in the world, because it has the largest storage of oil. Undoubtedly, highest budget of fire prevention and fire protection spent in the world is in the Gulf. They prevent fire by increasing the safety awareness of the people. That translates into thousands of job openings in the field of Safety as Safety Engineers, Officers and Supervisors. They also reduce the risk of fire by installing the latest of fire protection systems. As a result the largest installed base of fire protection systems in the world is the Gulf. This translates into thousands of people required in designing, installing, servicing of the fire protection systems.

ABOUT SAFETY MANAGEMENT

Safety profession plays a vital role in the safety of all forms of transportation, rail, roads, aviation, shipping corporations, oil & gas pipelines, chemical plants and many engineering activities and it involves the identification, evaluation and control of hazards in man machine system (Products, machines and equipment or facilities) which contain a potential to cause injury to people or damage to property. Safety management consists of act or safety programmer elements, policies and procedures that manage the conduct of safety activity. Safety Engineering and Safety Management make up the integrated whole, while Safety Engineering can be viewed as being the administrative software side of such prevention applied. The purpose of this course is to provide the students with

an understanding of industrial safety and accident prevention. By this course the student will gain knowledge of hazards in work place, management's liability and role in risk reduction and the responsibilities of State and Central Government.

Aerospace, Military, Medical, Scientifically - advance project and High-Tech industries have relied on the system safety specialists to develop concepts designs and product that have a high reliability of operations and low level of risk. Such specialists ensure that the safety on concepts and mechanisms work correctly every time, without harms to users, operators or the equipments itself.

The educational goal of Faculty of Security and Surveillance is to introduce students to the technical means in regard to prevent and reduce injuries or accidents in work places, because it directly or indirectly tractions a right to live for mankind. Another goal is to contribute to the industry and development of the country and promotion of citizens welfare in accordance with education of special engineers. Industrial safety engineering concerned with preventing accidents and minimizing their consequences as well as with reduction stress and inquiry to human being at the work place. Another important aspect is minimizing of property damage as chemical, electrical, mechanical, architectural safety engineering. Therefore, the trends in the recent research are technical means for effectively interfacing operations on the Man to Machine to System.

IMPORTANT JOB ASSIGNMENTS

1. Oil/hydro carbon related industry
2. Chemical industries.
3. Nuclear related industries
4. Electric/electronics related industries
5. Construction industries.
6. Disaster management
7. Explosive related industries
8. Aviation, shipping, locomotive and automobile
9. Safety equipment manufacturing companies
10. State Fire Service

11. Urban Development Authorities
 12. Sea-Port Authorities
 13. Marine Industry
 14. Fire department of Municipal cooperation
 15. Forest departments
 16. All India Authority of Disaster Management
 17. Fire service organizations in various social/industrial bodies
 18. Department of civil defense
 19. Defense Fire Service (Ordinance and ammunition depots)
 20. In service Industries and recreational institutions
 21. Hospitals, cinema halls and publishing houses
 22. Gas authority Ltds.
 23. Oil Producing and exporting Units
 25. Gas filling stations
 26. High buildings, shopping centers and other structures
 27. Private security agencies
 28. Other corporate sectors
- etc ..

REGULATION

Name of Faculty	Faculty of Security and Surveillance
Name of the Sector	Fire and Safety
Entry Qualification	<p>a. 12th Passed or equivalent in any Stream.</p> <p>b. The minimum physical requirements are</p> <p>i. Height - 165 cm</p> <p>ii. Weight - 52 kg</p> <p>iii. Chest - Normal 81 cm - Expanded 85 cm</p> <p>iv. A registered MBBS doctor must certify that the candidate is medically fit to undertake the course</p>
Minimum Age	16 years as on first day of academic session.
Batch Strength (No. of Student)	30
Class Room Size	450 sqft
Space Norms	2000 Sq. m (for practical Training area)
Instructors Qualification for:	
Instructor	<p>M.Voc./M. Tech in Fire & Safety /Health and Safety from AICTE/UGC recognized university/ college with One -year experience in the relevant field.</p> <p style="text-align: center;">Or</p> <p>B.Voc./B.Sc./B.Tech in Fire & Safety /Health and Safety from AICTE/UGC recognized university/ college with Three -year experience in the relevant field.</p> <p style="text-align: center;">Or</p> <p>Advanced Diploma/Post Graduate Diploma in Industrial Safety / Fire and Industrial Safety / Health, Safety & Environment or relevant Advanced Diploma (Vocational) from recognized board of education with Five year' experience in the relevant filed.</p> <p style="text-align: center;">Or</p> <p>Sub Officer / STO/ DO Course from NFSC Nagpur (only) with Five year' experience in the relevant filed.</p>
Drill and Practical Instructor	<p>Defense/Paramilitary forces Officer JCOs/NCOs with Three years of experience in the relevant field.</p> <p style="text-align: center;">Or</p> <p>NTC/NAC passed in the trade of Fire Technology and Industrial Safety Management or Health Safety and Environment with Five Years' experience in the relevant field.</p>
Note: -	
<p>1. Out of two Instructors required for the one batch, one must have Degree//PG Diploma/Advance Diploma and other must have other qualifications.</p> <p>2. Practical training ground can be away from the institute at a distance of maximum 20 kms in safe zone</p>	

LEARNING OUTCOME

Learning outcomes are a reflection of total competencies of a trainee and assessment will be carried out as per the assessment criteria.

LEARNING OUTCOMES (TRADE SPECIFIC)

1. Identify and select suitable chemicals (industrial, inflammable liquid) usable on the workplace following safety precautions.
2. Identify, select and execute the application of different types of extinguishers, hoses and hose fittings.
3. Select and prepare the hydrant and pump system for proper application.
4. Plan and execute the concept of hydraulics in workplace.
5. Select and categorize electrical hazard and risk and its mitigation.
6. Identify and select methods of using ladder in practical field.
7. Select the BA set and its application in appropriate place.
8. Identify and use small and special gears.
9. Plan and execute elementary treatment at any incidental spot.
10. Utilize knots and hitches in different special job and fire.
11. Plan and execute to uplift various gears with proper techniques, carry out Hazard and Risk evaluation selecting the proper method of rescue and F.F.
12. Analyze the concept of accident caused and prevention, accident investigation, analysis and safety management.
13. Select and apply provisions related to safety, health and welfare in respect of Factory Act, 1948.
14. Assess available resources and their proper use.
15. Interpret appropriate techniques of CPR.
16. Identify the importance of lighting, ventilation, work related stress and its measurement.
17. Plan and execute fixed firefighting installations for their effective utilization.
18. Select and use PPE, demonstrate its care and maintenance.
19. Select Automatic Fire Detection cum Alarm System to plan their effective utilization.
20. Plan and execute fire station administration.
21. Identify communication system in different organization and their scope of use.
22. Get accustomed with different fire situations and firefighting using extinguishers.
23. Plan and execute disaster response practices, IRS/JRT and salvage technique.
24. Select and apply correct rescue method.
25. Categorize building construction that can ensure fire and life safety.

26. Plan and execute fire protection measures based on construction and occupancy.
27. Plan and survey Airport and Aircraft, port and ship for rescue system and firefightingsystem on it.
28. Identify occupational hazards associated with different dangerous chemicals, dust,gases, mist, vapours etc. to plan and execute rescue operations in these cases.
29. Comply with safety precautions while working at height, confined place and workpermit system.
30. Identify the characteristics of various fire suppression agents including water and safety in manual and mechanical handling of materials.
31. Demonstrate hazard evaluation and risk analysis exercise.

PROGARMME

S. No	Name of Progamme	Duration	Semester	NSQF Level	Eligibility
1	B. Voc in Fire Technology and Industrial Safety Management	3 Year's	6 Sem	7	12 th Passed in any stream or equivalent
2	Advance Diploma	2 Year's	4 Sem	6	
3	Diploma	1 Year	2 Sem	5	
4	Certificate	6 Month's	1 Sem	4	

EASY ENTRY OR EXIT ROUT CHART

S.No	Programme	Programme Duration	Entry Qualification	Semester	Exit Break Up
1	B. Voc in Fire Technology and Industrial Safety Management	Three Year (Six Semester)	12 th Passed Or equivalent	1	Fire Technician
			12 th passed + CFT	2	DFTISM
			DFTISM	3	Advance Diploma FTISM
				4	
			5	B. Voc. FTISM	
			6		

LIST OF TOOLS & EQUIPMENT

S. No.	Name of the tools Equipment & Machinery as per syllabus	Quantity
1	Stored pressure Type Fire Extinguisher (9 Ltrs)	06 Nos
2	Mechanical Foam Type Fire Extinguisher (9 Ltrs)	06 Nos
3	ABC Type Fire Extinguisher 5/10 Kg	06 Nos
4	CO2 Type Fire Extinguisher (4.5 Kg)	06 Nos
5	Chemical Foam Type Fire Extinguisher (9 Ltrs)	02 Nos
6	BC Type Fire Extinguisher 5/10 Kg	02 Nos
7	Water CO2 Type Fire Extinguisher (9 Ltrs)	02 Nos
8	Extension Ladder (Size) 45/35 ft	02 Nos
9	All types of Branches or Nozzles	04 Nos
10	Fire Hose	
	a) 15 m	10 Nos
	b) 30 m	04 Nos
11	First Aid Box	02 Nos
12	All Types of small gears- Firemen Axe, Crow bar, Fire Beater, Ceiling Hook, Cutter etc.	01 Set
13	BA Set (Negative & Positive Pressure)	02 Nos
	a) Gas Cylinders	02 Nos
	b) Steel Back Plates	03 Nos
	c) Face Masks	02 Nos
14	Portable Fire Pump/TFP	01 Nos
15	All Types of Couplings	01 Set
16	Hydrant – Stand Pipe with flange Type	02 Nos
17	Fire Trays	02 Nos
18	Manual call point	01 No
19	Entry Suit/ Proximity Suit	02 Nos
20	Hose reel System	01 No
21	Hose Ramp	01 No

22	Hose Box	01 No
23	Fire Fighting Point complete Set (Glo sigh board) 12"X 6"	01 No
24	Section Hose 10 ft	02 Nos
25	Section Wrench	02 Nos
26	Metal Strainer	02 Nos
27	Basket Strainer	01 No
28	Sprinkler with sprinklers head (Bulb Type, Fusible Type)	02 Nos
29	Ropes 100 ft Long	01 No
30	Lines 100 ft Long	01No
31	Control Panel – Model	01 No
32	Personal protective Equipment	
	a) Helmet- ABC Type	20 Nos
	b) Laser Welding Safety Goggles	10 Nos
	c) Face Shield	10 Nos
	d) Welding Shield	10 Nos
	e) Ear Muff	10 Nos
	f) Ear Plug	10 Nos
	g) Canal Caps	10 Nos
	h) Safety Shoes	10 Nos
	i) Asbestos gloves (Rubber)	10 Nos
	j) Electrical hand Gloves	10 Nos
	k) Hand Gloves (Rubber)	10 Nos
	l) Dust Mask	10 Nos
33	Personal Protective Clothing for men	10 Nos
	a) Safety Shirt	10 Nos
	a) Safety Trouser	10 Nos
	b) Safety Jacket	10 Nos
	c) Cooling vest	10 Nos
	d) Gum Boots	10 Nos
34	Personal Fall Arrest System (PFAS)	02 Nos

35	Tripod	02 Nos
36	Pulley	02 Nos
37	Suspended Scaffold	02 Nos
38	Gas Detector	02 Nos
39	Plastic Tunnel (Sewer Rescue Drill)	04 Nos
40	Body Harness	01 No
41	Collecting Breeching	02 Nos
42	Dividing Breeching	02 Nos
43	Hydrant Flange	02 Nos
44	Hydrant Key & Bar (With hydrant Spindle)	01 No
45	Adopter for Air Store Pressure	01 Nos
46	Hydraulic Pressure Testing Machine	01 No
47	Salvage Equipment's- Salvage Sheet, Hoppers, Dollies, Buckets Etc.	01 Each.
48	Safety Belt	06 No
49	Safety Harness	06 Nos
50	All types of Detectors 1Pcs of each	04 Nos
51	Flux meter	05 Nos
52	Salvage Chute	01 No
53	Cut model of Fire Extinguisher	03 Nos
54	Fire Suit	02 Nos
55	Fire tender	01 No
56	Rescue van	01No.
57	Fire Extinguishing Ball	04 Nos
58	Fire Fighting Robot*	01 No
59	Fire Extinguishing Drone*	01 Nos
60	Automatic Modular Fire Extinguisher	01 No
61	Hook Ladder	01 Nos
62	Fireman Axe as per Standard (All Size)	06 No
63	Stretcher	01 Nos
64	Fire dangri	10 Nos