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GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT & ENTREPRENEURSHIP
DIRECTORATE GENERAL OF TRAINING

COMPETENCY BASED CURRICULUM

HEALTH, SAFETY & ENVIRONMENT

(Duration: One Year)

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL- 3.5

SECTOR – HEALTHCARE

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Directorate General of Training

HEALTH, SAFETY & ENVIRONMENT

(Non-Engineering Trade)

(Revised in March 2023)

Version: 2.0

CRAFTSMEN TRAINING SCHEME (CTS)

NSQF LEVEL – 3.5

Developed By

Ministry of Skill Development and Entrepreneurship

Directorate General of Training

CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE

EN-81, Sector-V, Salt Lake City,

Kolkata – 700 091

www.cstaricalcutta.gov.in

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1. COURSE INFORMATION

During the one-year duration of “Health, Safety & Environment” trade, a candidate is trained on Professional Skill, Professional Knowledge and Employability Skill related to job role. In addition to this, a candidate is entrusted to undertake project work, extracurricular activities and on-the-job training to build up confidence. The broad components covered under Professional Skill subject are as below: -

The trainees will be able to identify accident prone areas and adopt methods for reducing accidents following safety precautions; identify and apply safety policy in an industry and list out the duties and implement safety targets, objectives, standards, practices and performances. They will also identify marking and evaluate performance of explosives. They can prepare profile with an appropriate accuracy as per safety precaution in workshop. They will be able to plan, select and implement safety and health objectives, targets and performance standards and identify the various techniques of fire and other hazards. They will also identify and select methods of operation of fire extinguishers as per requirements; plan and execute hose & hose fittings; select and prepare the hydrant and pump system for proper application; identify and select respiratory personal protective devices and its maintenance andmeasure the effect of radiation and control the radiation on human body.

The trainees will be able to identify parameters governing the safety in construction and its impact on environment. They will also identify various techniques of earthing fault protection. They can plan and apply the methods of plant design and housekeeping, check and verify various industrial Hazards in process of melting (Furnaces), Casing and Forging. They can identify various types of water relay management systems, execute the risk analysis exercise, select and use PPE andcare and maintain the same. They will be able to apply the method of bulk storage system of LPG/CNG and prepare case study on major Chemical Disasters.

2. TRAINING SYSTEM

2.1 GENERAL

The Directorate General of Training (DGT) under Ministry of Skill Development & Entrepreneurship offers a range of vocational training courses catering to the need of different sectors of economy/ Labour market. The vocational training programmes are delivered under the aegis of Directorate General of Training (DGT). Craftsman Training Scheme (CTS) with variants and Apprenticeship Training Scheme (ATS) are two pioneer schemes of DGT for strengthening vocational training.

'Health, Safety & Environment' trade under CTS is one of the popular courses delivered nationwide through a network of ITIs. The course is of one-year duration. It mainly consists of Domain area and Core area. The Domain area (Trade Theory & Practical) imparts professional skills and knowledge, while the Core area (Employability Skill) imparts requisite core skills, knowledge, and life skills. After passing out the training program, the trainee is awarded National Trade Certificate (NTC) by DGT which is recognized worldwide.

Trainee broadly needs to demonstrate that they are able to:

- Read and interpret technical parameters/documents, plan and organize work processes, identify necessary materials and tools;
- Perform tasks with due consideration to safety rules, accident prevention regulations and environmental protection stipulations;
- Apply professional skill, knowledge & employability skills while performing jobs.
- Document the technical parameters related to the task undertaken.

2.2 PROGRESSION PATHWAYS

- Can join as Health & Safety Assistant and will progress further as Safety supervisor, Safety officer and can rise to the level of Manager.
- Can become Entrepreneur in the related field.
- Can join Apprenticeship programs in different types of industries leading to a National Apprenticeship certificate (NAC).
- Can join Crafts Instructor Training Scheme (CITS) in the trade for becoming an instructor in ITIs.
- Can join Advanced Diploma (Vocational) courses under DGT as applicable.

2.3 COURSE STRUCTURE

Table below depicts the distribution of training hours across various course elements during a period of one year: -

S No.	Course Element	Notional Training Hours
1.	Professional Skill (Trade Practical)	840
2.	Professional Knowledge (Trade Theory)	240
3.	Employability Skills	120
	Total	**1200**

Every year 150 hours of mandatory OJT (On the Job Training) at nearby industry, wherever not available then group project is mandatory.

On the Job Training (OJT)/ Group Project	150
Optional Courses (10th/ 12th class certificate along with ITI certification or add on short term courses)	240

Trainees of one-year or two-year trade can also opt for optional courses of up to 240 hours in each year for 10th/ 12th class certificate along with ITI certification or add on short term courses.

2.4 ASSESSMENT & CERTIFICATION

The trainee will be tested for his skill, knowledge and attitude during the period of course through formative assessment and at the end of the training programme through summative assessment as notified by the DGT from time to time.

a) The **Continuous Assessment** (Internal) during the period of training will be done by **Formative Assessment Method** by testing for assessment criteria listed against learning outcomes. The training institute has to maintain an individual trainee portfolio as detailed in assessment guideline. The marks of internal assessment will be as per the formative assessment template provided on www.bharatskills.gov.in

b) The final assessment will be in the form of summative assessment. The All India Trade Test for awarding NTC will be conducted by Controller of examinations, DGT as per the guidelines. The pattern and marking structure are being notified by DGT from time to time. **The learning outcome and assessment criteria will be the basis for setting question papers for final assessment.** The examiner during final examination will also check the individual trainee's profile as detailed in assessment guideline before giving marks for practical examination.

2.4.1 PASS REGULATION

For the purposes of determining the overall result, weightage of 100% is applied for six months and one-year duration courses and 50% weightage is applied to each examination for two years courses. The minimum pass percent for Trade Practical and Formative assessment is 60% & for all other subjects is 33%.

2.4.2 ASSESSMENT GUIDELINE

Appropriate arrangements should be made to ensure that there will be no artificial barriers to assessment. The nature of special needs should be taken into account while undertaking the assessment. Due consideration should be given while assessing for teamwork, avoidance/reduction of scrap/wastage and disposal of scrap/waste as per procedure, behavioral attitude, sensitivity to the environment and regularity in training. The sensitivity towards OSHE and self-learning attitude are to be considered while assessing competency.

Assessment will be evidence based comprising some of the following:

- Job carried out in labs/workshop
- Record book/ daily diary
- Answer sheet of assessment
- Viva-voce
- Progress chart
- Attendance and punctuality
- Assignment
- Project work
- Computer based multiple choice question examination
- Practical Examination

Evidences and records of internal (Formative) assessments are to be preserved until forthcoming examination for audit and verification by examining body. The following marking

pattern to be adopted for formative assessment:

Performance Level	Evidence
(a) Marks in the range of 60%-75% to be allotted during assessment	
For performance in this grade, the candidate should produce work which demonstrates attainment of an acceptable standard of craftsmanship with occasional guidance, and due regard for safety procedures and practices.	• Demonstration of good skills and accuracy in the field of work/ assignments. • A fairly good level of neatness and consistency to accomplish job activities. • Occasional support in completing the task/ job.
(b) Marks in the range of 75%-90% to be allotted during assessment	
For this grade, a candidate should produce work which demonstrates attainment of a reasonable standard of craftsmanship, with little guidance, and regard for safety procedures and practices.	• Good skill levels and accuracy in the field of work/ assignments. • A good level of neatness and consistency to accomplish job activities. • Little support in completing the task/job.
(c) Marks in the range of more than 90% to be allotted during assessment	
For performance in this grade, the candidate, with minimal or no support in organization and execution and with due regard for safety procedures and practices, has produced work which demonstrates attainment of a high standard of craftsmanship.	• High skill levels and accuracy in the field of work/ assignments. • A high level of neatness and consistency to accomplish job activities. • Minimal or no support in completing the task/ job.

3. JOB ROLE

Occupational Health and Safety Specialist; reviews, evaluates, and analyses work environments and design programmes and procedures to control, eliminate, and prevent disease or injury caused by chemical, physical, and biological agents or ergonomic factors. May conduct inspections and enforce adherence to laws and regulations governing the health and safety of individuals. May be employed in the public or private sector. Investigates adequacy of ventilation, exhaust equipment, lighting, and other conditions which may affect employee health, comfort or efficiency. Conducts evaluations of exposure to ionizing and nonionizing radiation and to noise. Collects samples of dust, gases, vapours, and other potentially toxic materials for analysis. Recommends measures to ensure maximum employee protection. Collaborates with engineers and physicians to institute control and remedial measures for hazardous and potentially hazardous conditions of equipment. Participates in educational meetings to instruct employees in matters pertaining to occupational health and prevention of accidents. Prepares reports including observations, analysis of contaminants, and recommendation for control and correction of hazards. Reviews physicians' reports and conducts worker studies to determine if diseases or illnesses are job related. Prepares and calibrates equipment used to collect and analyse samples. Prepares documents to be used in legal proceedings and gives testimony in court proceedings.

Environmental Compliance Inspector; inspects and investigate sources of pollution to protect the public and environment and ensure conformance with Central, State, and local regulations and ordinances. Inspects solid waste disposal and treatment facilities, wastewater treatment facilities, or other water courses or sites for conformance with regulations. Inspects establishments to ensure that handling, storage, and disposal of fertilisers, pesticides, and other hazardous chemicals conform with regulations. Conducts field tests and collects samples for laboratory analysis. Examines permits, licenses, applications, and records to ensure compliance with licensing requirements. Assists in development of spill prevention programmes and hazardous waste rules and regulations, and recommends corrective action in event of hazardous spill. Prepares, organizes, and maintains records to document activities, recommend action, provide reference materials, and prepare technical and evidentiary reports. Studies laws and statutes to determine nature of code violation and type of action to be taken. Advises individuals and groups concerning pollution control regulations, inspection and investigation findings, and encourages voluntary action to correct problems.

Reference NCO-2015:

a) 2141.2600 - Occupational Health and Safety Specialist
b) 3257.0400 - Environmental Compliance Inspector

Reference NOS:

a) MIN/N1702
b) MIN/N1703
c) MIN/N1704
d) MIN/N1705
e) HSC/N9913
f) HSC/N9902
g) HSC/N9903
h) MIN/N0416
i) MIN/N0417
j) MIN/N0418
k) MIN/N3102
l) HCS/N2204
m) MIN/N9417
n) MIN/N9418
o) MIN/N9419
p) MIN/N9420
q) MIN/N9421
r) MIN/N9422
s) MIN/N9423
t) MIN/N9424
u) MIN/N9425
v) MIN/N9426
w) MIN/N9427
x) MIN/N9428

4. GENERAL INFORMATION

Name of the Trade	**HEALTH, SAFETY & ENVIRONMENT**
NCO – 2015	2141.2600, 3257.0400
NOS Covered	MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903, MIN/N0416, MIN/N0417, MIN0418, NOS: MIN/N3102, HCS/N2204, MIN/N9417, MIN/N9418, MIN/N9419, MIN/N9420, MIN/N9421, MIN/N9422, MIN/N9423, MIN/N9424, MIN/N9425, MIN/N9426, MIN/N9427, MIN/N9428
NSQF Level	Level-3.5
Duration of Craftsmen Training	One Year (1200 Hours + 150 hours OJT/Group Project)
Entry Qualification	Passed class 10th Class Examination **The minimum physical requirements:** **i) For Male** **Height: -** Minimum 165 cms (Relaxable by 5 cms in the case of Garhwals, Assamese Gorkha and member of the Schedule tribes). **Chest: -** Minimum 81 cms Unexpanded and 86 cms. with expansion (Fully expanded with minimum of 5 cms expansion) **Weight: -** Minimum 50 Kgs **ii) For Female** **Height: -** Minimum 157 cms (Relaxable by 2.5 cms in the case of Garhwals, Assamese Gorkha and member of the Schedule tribes). **Weight: -** Minimum 46 Kgs ***Note: -*** *A registered MBBS doctor must certify that the candidate is medically fit to undertake the course.*
Minimum Age	14 years as on first day of academic session.
Eligibility for PwD	LD
Unit Strength (No. of Student)	24 (There is no separate provision of supernumerary seats)
Space Norms	1000 Sq. m (for practical Training area)
Power Norms	2 KW
Instructors Qualification for:	
(i) Health, Safety & Environment Trade	B.Voc/Degree in Fire & Safety Engineering/ Degree in Fire Science from AICTE/UGC recognized university/ college with one-year experience in the relevant field. **OR**

	Post Graduate Diploma (Minimum 2 years) in Industrial Safety Engineering/ Fire and Industrial Safety Engineering/ Health, Safety & Environment from recognized board of education or relevant Advanced Diploma (Vocational) from DGT with two-year experience in the relevant field. **OR** Defense/ Para Military Forces Officer JCOs/NCOs with 10 years of experience in the relevant field. **OR** National Examination Board Occupational Safety and Health (NEBOSH)/ Occupational Safety and Health Administrator (OSHA) Certification with one-year experience in the relevant field. **OR** NTC/NAC passed in the trade of Health Safety and Environment with 3 years of post-qualification experience in the relevant field. **Essential Qualification:** Relevant Regular / RPL variants of National Craft Instructor Certificate (NCIC) under DGT. ***Note:- Out of two Instructors required for the unit of 2 (1+1), one must have Degree/Diploma and other must have NTC/NAC qualifications. However, both of them must possess NCIC in any of its variants.***
(ii) Employability Skill	MBA/ BBA / Any Graduate/ Diploma in any discipline with Two years' experience with short term ToT Course in Employability Skills. (Must have studied English/ Communication Skills and Basic Computer at 12th / Diploma level and above) **OR** Existing Social Studies Instructors in ITIs with short term ToT Course in Employability Skills.
(iii) Minimum Age for Instructor	21 Years
List of Tools and Equipment	As per Annexure – I

5. LEARNING OUTCOME

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

5.1 LEARNING OUTCOME:

1. Identify accident prone areas and adopt methods for reducing accidents following safety precautions. (NOS: MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)
2. Identify and apply safety policy in an industry and List out the duties and implement Safety Targets, Objectives, Standards, Practices and Performances. (NOS: MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)
3. Identify marking and evaluate performance of explosives. (NOS: MIN/N0416, MIN/N0417, MIN0418)
4. Prepare profile with an appropriate accuracy as per safety precaution in workshop. (NOS: MIN/N9417)
5. Select the construction site for visit, plan and prepare the report. (NOS: MIN/N9418)
6. Select, plan and implement safety and health objectives, targets and performance standards. (MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)
7. Identify causes of fire, techniques of fire extinguishing methods and other hazards. (NOS: MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)
8. Plan and execute hose and hose fittings. (NOS: MIN/N9419)
9. Select and prepare the hydrant and pump system for proper application. (NOS: MIN/N9420)
10. Identify and select respiratory personal protective devices and carry out its maintenance. (NOS: MIN/N0901, HSC/N9913, HSC/N9902, HSC/N9903)
11. Measure the effect of radiation and control the radiation on human body. (NOS: MIN/N9421)
12. Identify parameters governing the safety in construction and its impact on environment. (NOS: MIN/N9422)
13. Identify various techniques of earthing standards and earth fault protection. (NOS: MIN/N3102)
14. Plan and apply methods of plant design and housekeeping. (NOS: MIN/N9423)
15. Check and verify various industrial Hazards in process of melting (Furnaces), Casing and Forging. (NOS: HCS/N2204)
16. Identify various types of water relay management systems. (NOS: MIN/N9424)

17. Execute the risk analysis exercise. (NOS: MIN/N9425)
18. Select and use PPE, care and maintain the same. (NOS: HCS/N9913, HCS/N9902, HCS/N9903)
19. Apply the method of bulk storage system of LPG/CNG. (NOS: MIN/N9426)
20. Prepare case study on major Chemical Disasters. (NOS: MIN/N9427)
21. Practice Bio Medical Waste and E- Management. (NOS: MIN/N9428)
22. Demonstrate Process to control noise pollution. (NOS: MIN/N1702, MIN/N1703, MIN/N1704,)

6. ASSESSMENT CRITERIA

LEARNING OUTCOMES	ASSESSMENT CRITERIA
1. Identify accident prone areas and adopt methods for reducing accidents following safety precautions. (NOS: MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)	Identify the various accident-prone areas.
	Demonstrate the safety belt helmets, gloves and Goggles, uses it.
	Identify and apply Accident prevention techniques.
	Use Safety belt helmet gloves and goggles.
2. Identify and apply safety policy in an industry and List out the duties and implement Safety Targets, Objectives, Standards, Practices and Performances. (NOS: MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)	Carry out the plant safety inspection with the help of check list.
	Visit to industrial unit and review of prevailing safety Practices.
	Observe prevailing safety provision, their condition, welfare measures include medical facilities, crèches and religious places.
	Get acquainted with various compensations and Documentations.
3. Identify marking and evaluate performance of explosives. (NOS: MIN/N0416, MIN/N0417, MIN0418)	Display explosives identify and mark as per explosives act.
	Demonstrate hands on experience with hand and power tools.
	Perform measurement of Heat, Illumination and Noise Demonstration.
	Carry related electrical experiments.
4. Prepare profile with an appropriate accuracy as per safety precaution in workshop.	Identify various processes during production and safety.
	Witness construction and safety precaution observed.

(NOS: MIN/N9417)	
5. Select the construction site for visit, plan and prepare the report. (NOS: MIN/N9418)	Practice good housekeeping and study egress and safe access.
	Identify causes of accident during material handling.
	Perform pitching of ladders, proper use of safety belt and preparation of work permit.
6. Select, plan, and implement safety and Health objectives, targets and performance standard. (NOS: MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)	Develop a workplace Safety and Health Policy.
	Plan safety and Health objectives and Targets, performance standards.
	Carry out Implementation and Operation Structure and responsibilities, individual responsibilities, Safety Consultation.
	Describe Prevention and Control of Pollution Act 1981 and 1982
	Describe Environment Protection Act 1986
7. Identify causes of fire, techniques of fire extinguishing methods and other hazards. (NOS: MIN/N1702, MIN/N1703, MIN/N1704, MIN/N1705, HSC/N9913, HSC/N9902, HSC/N9903)	Identify general causes and classification of fire, Demonstrate detection of fire, extinguishing methods, firefighting installations with and without water.
	Identify machine guards and its types, automation.
	Recognize high pressure hazards, safety, emptying, inspecting, repairing, hydraulic and non-destructive testing, hazards and control in mines.
8. Plan and execute hose and hose fittings. (NOS: MIN/N9419)	Perform hose drill.
	Carry out hose pick up.
	Perform hose laying.
	Carry out hose joining.
	Perform hose replacement at different position.
9. Select and prepare the hydrant and pump system for proper application.	Identify Appropriate Action.
	Demonstrate risk assessment records and control.
	Familiarize with hydrant and its associated equipment.
	Demonstrate practical pump operation, fault finding of primer

(NOS: MIN/N9420)	failure, method of ladder pitching and climbing Application of Arm Hold and Leg Lock.
10. Identify and select respiratory personal protective devices and carry out its maintenance. (NOS: MIN/N0901, HSC/N9913, HSC/N9902, HSC/N9903)	Identify stages in plant life and unsafe condition in factories.
	Demonstrate maintenance and safety, basics safety programming, safety department functions, Rules and regulation of safety department.
	Check responsibility of management for safety in plant, safeguarding the public.
	Identify responsibility of government, Social organization and public authorities.
11. Measure the effect of radiation and control the radiation on human body. (NOS: MIN/N9421)	Identify types and effects of radiation on human body, measure and detect radiation intensity.
	Identify effects of radiation on human body, measure disposal of radioactive waste, control radiation.
12. Identify parameters governing the safety in construction and its impact on environment. (NOS: MIN/N9422)	Identify scope, importance and need for public awareness about our environment.
	Observe economic and social security, environment impact of transportation.
	Explain global warming and greenhouse effect, urbanization, acid rain.
	Demonstrate health and environment effect through chart.
	Explain environmental pollution — causes, effects and control measures of air pollution, water pollution, soil pollution.
13. Identify various techniques of earthing standards and earth fault protection. (NOS: MIN/N3102)	Demonstrate safe limits of amperages, voltages, distance from lines etc. Joints and Connections, Overload and Short circuit protection.
	Explain earthing standards and earth fault protection, protection against voltage.
	Identify criteria in their selection, installation, maintenance.
	Explain Borrowed neutrals, Electrical equipment in hazardous atmosphere.
14. Plan and apply methods of plant design and housekeeping. (NOS: MIN/N9423)	Demonstrate Plant layout, design and safe distance, Ventilation and heat stress, Significance of ventilation, Natural ventilation.
	Apply Mechanical ventilation Air conditioning.
	Plan Safety and good housekeeping, Disposal of scrap and other trade wastes.

	Apply Spillage prevention, Use of colour as an aid of housekeeping, Cleaning methods.
	Inspect and make checklists, identify advantages of good houses.
15. Check and verify various industrial Hazards in process of melting (Furnaces), Casing and Forging. (NOS: HCS/N2204)	Demonstrate prevailing condition in industry about Drinking Water Sanitary and Washing, Cloakrooms.
	Identify Facilities for Food and Drink Shelters and Living Accommodation.
	Explain Disaster management floods, earthquake, cyclone and slides.
	Identify role of individual in prevention of pollution.
16. Identify various types of water relay management systems. (NOS: MIN/N9424)	Maintain ladders and trolleys.
	Design turntable ladders, water tender and special equipment.
	Identify Types of water relay system.
	Check various arrangements of water relay system.
17. Execute the risk analysis exercise. (NOS: MIN/N9425)	Check definitions of incident, accident, injury, dangerous occurrences, unsafe acts, unsafe conditions, hazards, error, oversight, mistakes etc.
	Demonstrate Accident Prevention: Theories / Models of accident occurrences, Principles of accident prevention.
	Demonstrate Accident and Financial implications, Hazard identification and analysis, fault tree analysis, Job safety analysis, examples, Plant safety inspection objectives and types, check procedure of inspection.
18. Select and use PPE, care and maintain the same. (NOS: HCS/N9913, HCS/N9902, HCS/N9903)	Select and Use Personal Protective Equipment: Need, selection, supply, use, care and maintenance, Personal protective devices for head, ear, face, eye, foot, knee and body protection, Respiratory personal protective devices.
	Carry out Cardiac massage, explain poisoning, wounds.
19. Apply the method of bulk storage system of LPG/CNG. (NOS: MIN/N9426)	Identify General Consideration types of Storage.
	Plan and prepare layout of storages with specific reference to LPG, CNG, Chlorine, Ammonia.
20. Prepare case study on major Chemical Disasters. (NOS: MIN/N9427)	Prepare case study on Major Chemical Disasters.
	Identify various Occupational Health Hazards.
	Explain Dangerous Properties of Chemicals, Dust, Gases, Fumes, Mist, Vapours, Smoke and Aerosols.

21. Practice Bio Medical Waste and E-Management (NOS: MIN/N9428)	Apply Techniques of segregation, packaging, storage, transport of infectious waste
	Demonstrate different treatment method for Bio Medical Waste
	Exhibit process of accumulation, storage and disposal of hazardous waste
22. Demonstrate Process to control noise pollution (NOS: MIN/N1702, MIN/N1703, MIN/N1704)	Demonstrate measurement of noise
	Exhibit Process to control noise pollution

7. TRADE SYLLABUS

SYLLABUS FOR HEALTH, SAFETY & ENVIRONMENT TRADE			
DURATION: ONE YEAR			
Duration	**Reference Learning Outcome**	**Professional Skills (Trade Practical) With Indicative Hours**	**Professional Knowledge (Trade Theory)**
Professional Skill 70 Hrs; Professional Knowledge 22 Hrs	Identify accident prone areas and adopt methods for reducing accidents following safety precautions.	1. Familiarization with the Institute, Documentationof Student, Issuance of Dress, Books, Hostel Accommodation (If required) and Store. 2. Importance of trade training, Equipment used in the trade, types of workdone by the trainees in thetrade. 3. Introduction to safety equipment and their uses.Introduction of first aid, Road safety, operation of Electrical mains. 4. General Safety, Occupational health and hygiene.	**Incident Command**: Types of Incident. Analyse possible hazards and emergencies. HAZARD: Introduction to Hazard, Causes, Identification, Vulnerability analysis, Risk analysis, Evaluation & Control of Hazard. HAZOP Analysis, Sources for Information on Hazard Evaluation. Preparative work (Obtain basic information, information should be converted into suitable form, Plan the sequence & meeting schedule), Team composition & approach. Methodology, Advantages of HAZOP Study Limitation of HAZOP study.
		5. Site visit for Hazard identification and Evaluation. 6. Study of Risk at work site and preparation and initiation of reports. 7. Emergency response functional drill – viz. Medical Response, Evacuation drill, etc.	**Risk Analysis**: Definition of Risk, Risk Analysis, Introduction to Failure Mode & Effect Analysis (FMEA), Fault Tree Analysis (FTA), Event Tree Analysis (ETA).
		8. Visit to accident prone area Practical usages of	**Accident**: Definition of Accidents, Classification of

		Safety belt helmet gloves, and goggles.	Accidents, need for the Analysis of Accidents, Methods Adopted for Reducing Accidents, Investigation of Accidents, Safety Slogans Principles of Accident (Heinrich theory), Accident ratio study, identification of unsafe mechanical/ physical conditions, identification of unsafe acts. Frequency Rate, Prevention Methods.
Professional Skill 60 Hrs; Professional Knowledge 16 Hrs	Identify and apply safety policy in an industry and List out the duties and implement Safety Targets, Objectives, Standards, Practices and Performances.	9. Carry out the plant safety inspection with the help of check list. 10. Visit to industrial unit and review of prevailing safety Practices	**Preparation & Assessment of Safety Audit**: Introduction to Safety Checklist, Plant Safety Inspection, Safety Precautions adopted in the Plant, Safety Tag System, Safety Audit Report Objective of safety audit, type of audit, Audit team, Elements of safety audit, Method of audit, audit steps, concept and lay out of audit report.
		11. Visit to industrial unit to observe prevailing safety provision, their condition, welfare measures include medical facilities, crèches and religious places. 12. Awareness about various compensations and Documentation.	**Safety Concept**: Introduction to Safety Management, Safety Policy, Safety Committee, Safety Review, Responsibility of Management, Safety Officers Duties & Responsibilities, Safety Targets, Objectives, Standards, Practices and Performances. Motivation & Communication as part of Safety Programme. Duties & responsibility of an owner, Duties and responsibilities of a worker, Role of a supervisor Role of a safety engineer

			ILO Convention: Introduction of ILO and Conventions.
Professional Skill 40 Hrs; Professional Knowledge 10 Hrs	Identify marking and evaluate performance of explosives.	13. Display of explosives, their identification and marking as per explosives act. 14. Hands on experience with Hand and power tools. 15. Measurement of Heat, Illumination and Noise Demonstration. 16. Determination of related electrical experiments.	**Factories Act 1948 (Amended): -** Health - Cleanness, Disposal of Waste, Ventilation and Temperatures, Dust & Fumes, Drinking Water, Lighting, Latrines & urinals. Safety - Fencing of machineries, Work on or near machinery in motion, Hoists and lifts, Pressure plants, Floors, Stairs and means of escape, Protection against fumes & gases, Safety offers. Welfare - Washing facilities in Dry clothing, Storing, Sitting, First Aid Appliances, Canteen, Shelters for rest & lunch, Creches, Welfare offers, Right & Obligation of workers.
Professional Skill 20 Hrs; Professional Knowledge 06 Hrs	Prepare profile with an appropriate accuracy as per safety precaution in workshop.	17. Visit to workshop and steel furniture houses to witness various processes during production and safety. Precaution adopted. 18. Visit to construction site to witness construction and safety precaution observed.	**Welfare & Training**: General Provision, Drinking Water, Sanitary & Washing, Cloakrooms, Facilities for Food & Drink, Shelters & Living Accommodation, Information & Training.
Professional Skill 40 Hrs; Professional Knowledge 18 Hrs	Select the construction site for visit, plan and prepare the report.	19. Construction Site Visit Practices of good House Keeping and Study of egress and safe access. 20. Construction Site Visit and identifying of causes of accident during material handling. 21. Construction Site Visit,	**Environment Protection**: Safety and Protection of existing environment, Principles & Practices in Prevention & Control of Pollution, Water Pollution, Climate Changes: Introduction, Green House Gases: an overview, the role

		Pitching of ladders, proper use of safety belt and preparation of work permit.	of carbon Dioxide, Methen, co_2 emissions, carbon cycling, Global Warming. • Components of climate change • Factors effecting climate change • Causes for rising emissions • How to prevent climate change • Harmful impact of climate change • Ways to help environment
		22. Visit to excavation Site, identification and discussion with site engineer about safety precaution taken.	**Social Security Legislation**: Social Security Legislation, Introduction to Workman's Compensation Act, Contract Labour Regulation Act.
Professional Skill 20 Hrs; Professional Knowledge 06 Hrs	Select, plan, and implement safety and Health objectives, targets and performance standards.	23. Developing a workplace Safety and Health Policy. 24. Planning – safety and Health objectives and Targets, performance standards. 25. Implementation and Operation Structure and responsibilities, individual responsibilities, Safety Consultation.	Miscellaneous Acts & Rules Explosives Act 1884 and Rules. General provision of Gas Cylinders Rules, The Building and other Construction Worker's Welfare Cess Act & Rules 1996. Environment Protection Legislation: Introduction to Prevention and Control of Pollution Act 1981 and 1982, Environment Protection Act 1986
Professional Skill 20 Hrs; Professional Knowledge 10 Hrs	Identify causes of fire, techniques of fire extinguishing methods and other hazards.	**Fire and other Hazards**: 26. General causes and classification of fire, Detection of fire, extinguishing methods, fire fighting installations with and without water. 27. Machine guards and its types, automation. 26. High pressure hazards,	**Anatomy of Fire**: Definition of Combustion, Elements of Combustion, Products of Combustion, Heat of reaction and calorific value, Flash point, Fire point, Ignition temperature and spontaneous combustion. Fire Triangle, fire tetrahedron, fire pyramid,

		safety, emptying, inspecting, repairing, hydraulic and non-destructive testing, hazards and control in mines.	source of heat, (Chemical, mechanical, Electrical, Nuclear etc.), Classification of fire and method of fire extinguishment, oxygen and its effects on combustion, maintenance, method of operation, Halon and its detrimental effect on environment. Alternatives of Halon. Types of fire extinguishing agents, Rating system for portable fire extinguishers, Limitation of fire extinguishers, inspection requirement.
Professional Skill 20 Hrs; Professional Knowledge 06 Hrs	Plan and execute hose and hose fittings.	29. Hose drill a) hose pick up b) hose laying c) hose joining d) hose replacement at different position	Hose & Pumps, Water Tender: Fire Service Hose & Hose Fittings, Fixed Fire Fighting Installations Ropes & lines, Practical Fireman ship, Small & Special Gears, Water Tender. Types of fire hoses, its construction, caused of decay care & maintenance Types of hose fittings, identification and use of hose fittings. Types of FFF installations Testing care & maintenance.
Professional Skill 20 Hrs; Professional Knowledge 06 Hrs	Select and prepare the hydrant and pump system for proper application.	30. Familiarization and demonstration of Hydrant and its associated equipment. 31. Practical pump operation, fault finding of primary failure, method of ladder pitching & climbing Application of Arm Hold and Leg Lock. 32. Identify Appropriate Action. 33. Risk assessment records and control.	**Hydrant, Detectors & Ladders**: Introduction to Hydrant & Hydrant Fittings, Water Supply requirements for firefighting, Introductions to pump & Primers, Detectors & Ladders.

		34. A simple Risk estimation example – Hazards, remedial measures. 35. Motivation of employees, Insurance coverage of Industrial plant & personnel.	
Professional Skill 40 Hrs; Professional Knowledge 10 Hrs	Identify and select respiratory personal protective devices and carry out its maintenance.	36. First Aid Procedures with Disaster Management 37. Stages in plant life and unsafe condition in factories. 38. Maintenance & safety, basics safety programming, safety department, Rules and regulation of safety department. 39. Responsibility of management for safety in plant, safeguards the public. 40. Responsibility of government, Social organization and public authorities.	Public Health and Emergency situation Management - Basic Introduction to Incident Control Systems in public health emergency situations **Breathing Sets**: Classification of Respiratory Personal Protective Devices, Selection of Respiratory Personal Protective Devices, Instruction & Training in the use, Maintenance and Care of Self Containing Breathing Apparatus. **Resuscitation & First Aid**: Burns, Fractures, Toxic Ingestion, Bleeding, Wounds and Bandaging, Artificial Respiration, Techniques of Resuscitation.
Professional Skill 20 Hrs; Professional Knowledge 06 Hrs	Measure the effect of radiation and control the radiation on human body.	Radiation and Industrial Hazards: 41. Types and effects of radiation on human body, Measurement and detection of radiation intensity. 42. Effects of radiation on human body, Measurement – disposal of radioactive waste, Control of radiation.	Introduction to Radiation and Industrial Hazards
Professional Skill 60 Hrs;	Identify parameters governing the	43. Scope and Importance; need for public awareness about our environment.	**Basic Philosophy of Safety**: Peculiarities & Parameters governing the safety in

Professional Knowledge 16 Hrs	safety in construction and its impact on environment.	44. Economic and social security; Environment impact of transportation. 45. Environmental impact assessment (EIA) — purpose, procedure and benefits of EIA; Biodiversity and its conservation. 46. Global warming and greenhouse effect, urbanization, acid rain. 47. Demonstration of health and environment effect through chart. 48. Case studies, population explosion, family welfare programmers-HI V/AIDS, women and child welfare. 49. Environmental pollution — causes, Effects and control measures of air pollution, water pollution, soil pollution.	construction e.g. Site Planning, Layout, Safe Access / Egress. Construction Industry: General safety precautions related to construction industry, Safety in the use of Construction Machinery. Industrial Lighting: Introduction to Lighting, Ventilation, Heat Stress, Cold Stress, Noise & Vibration.
Professional Skill 20 Hrs; Professional Knowledge 06 Hrs	Identify various techniques of earthing standards and earth fault protection.	**Electrical Hazards and Hazards in Construction Industry**: 50. Safe limits of amperages, voltages, distance from lines, etc., Joints and connections, Overload and Short circuit protection. 51. Earthing standards and earth fault protection, Protection against voltage fluctuations, Effects of shock on human body Hazards from Borrowed neutrals. 52. Electrical equipment in hazardous atmosphere. 53. Criteria in their selection.	**Electrical Safety**: Electrical Hazards, Static Electricity. Identification and Zoning of Hazardous area, Classification of products.

		Installation, maintenance.	
Professional Skill 45 Hrs; Professional Knowledge 10 Hrs	Plan and apply methods of plant design and housekeeping.	**Plant design and Housekeeping**: 54. Plant layout, design and safe distance, Ventilation and heat stress, Significance of ventilation, Natural ventilation. 55. Mechanical ventilation Air conditioning. 56. Safety and good housekeeping, Disposal of scrap and other trade wastes. 57. Spillage prevention, Use of colour as an aid of housekeeping, Cleaning methods. 58. Inspection and Checklists, Advantages of good houses.	**Excavations, Demolitions & Structural Frames**: Safety related to Excavation, Demolitions Framework & Concrete Work, Pile Driving and Work over Water.
Professional Skill 45 Hrs; Professional Knowledge 12 Hrs	Check and verify various industrial Hazards in process of melting (Mapped Furnaces), Casing and Forging.	59. Demonstration of prevailing condition in industry about Drinking Water Sanitary & Washing, Cloakrooms Facilities for Food & Drink Shelters & Living Accommodation. Disaster management floods, earthquake, cyclone, and slides, role of individual in prevention of pollution.	**Safety in Melting, Boilers**: Hazards in process of melting (Furnaces), Casing, and Forging. Automatic Manufacturing Activity - Machining, Chipping, Grinding, Safety Precautions in use of Boilers. Precautions in Processes: Precautions in processes and operations involving Explosive, Toxic Substances, Dusts, Gases, Vapour Clouds Formation and Combating, Workplace Exposure Limit, Control Measures.
Professional Skill 45 Hrs; Professional Knowledge 10 Hrs	Identify various types of water relay management systems.	60. Maintenance of ladders and trolleys. 61. Design of turntable ladders, water tender and special equipment. 62. Identify Types of water	**Safety in The Engineering Industry**: Introduction to Machine Operations & Guarding, Safety in the use of Machines, Safety precautions while using

		relay system. 63. Arrangements of water relay system.	Hand Tools & Power Tools, Selection, Maintenance & Care of Hand and power tool.
Professional Skill 65 Hrs; Professional Knowledge 18 Hrs	Execute the risk analysis exercise.	**Principles of accidents prevention:** 64. Definition: Incident, accident, injury, dangerous occurrences, unsafe acts, unsafe conditions, hazards, error, oversight, mistakes, etc. 65. Accident Prevention: Theories / Models of accident occurrences, Principles of accident prevention. 66. Accident and Financial implications, Hazard identification and analysis, fault tree analysis, Job safety analysis, examples, Plant safety inspection objectives and types check procedure inspection.	**Chemical Compatibility & Transportation**: Chemicals Compatibility considerations, Transportation of Chemicals, Toxic / Flammable / Explosive / Radioactive Substances by all modes - safety precautions, Use of material Safety Data Sheets.
Professional Skill 50 Hrs; Professional Knowledge 12 Hrs	Select and use PPE, care and maintain the same.	67. Body structure and Functions, Position of causality, the unconscious casualty, fracture and dislocation, Injuries in muscles and joints, Bleeding, Burns, Scalds and accidents caused by electricity, Respiratory problems, Rescue and Transport of Casualty. 68. Cardiac massage, poisoning, wounds. 69. Personal Protective Equipment: Need, selection, supply, use, care and maintenance, Personal protective	**Personal Protective Equipment**: Need for Personal Protection Equipment, Selection, Use, Care & Maintenance of Respiratory and Non-respiratory Personal Protective Equipment, Non-respiratory Protective Devices- Head Protection, Ear Protection, Face and Eye Protection, Hand Protection, Foot Protection, Body Protection.

		devices for head, ear, face, eye, foot, knee and body protection, Respiratory personal protective devices.	
Professional Skill 20 Hrs; Professional Knowledge 06 Hrs	Apply the method of bulk storage system of LPG/CNG.	70. Visit to LPG/ CNG storage Site.	**Bulk Storage**: General Consideration, Types of Storage, Layout of storages with specific reference to LPG, CNG, Chlorine, Ammonia.
Professional Skill 20 Hrs; Professional Knowledge 10 Hrs	Prepare case study on major Chemical Disasters.	71. Preparation of Case study of Major Chemical Disasters.	**Occupational Hazards & Dangerous Chemicals**: Introduction to Occupational Health Hazards & Dangerous Properties of Chemicals, Dust, Gases, Fumes, Mist, Vapours, Smoke and Aerosols, Concepts of Threshold Limit Values, Classification of Hazards Chemicals Accident Prevention & major Case Studies: Major Industrial Accidents due to Chemicals (Bhopal Gas Tragedy) Emergency Planning, Major Industrial Disaster Case Studies.
Professional Skill 80 Hrs; Professional Knowledge 20 Hrs	Practice Bio Medical Waste and E- Management	**Bio Medical Waste and E-Management** 72. Techniques of segregation, packaging, storage, transport of infectious waste. 73. Techniques of Biomedical waste management. 74. Treatment method- Autoclave, Hydroclave, Microwave, Chemical Disinfection, Solidification and stabilization, Bioremediation, 75. Accumulation and storage	**Bio Medical Waste and E-Management** (a)Introduction: various aspects of hazardous waste, biomedical waste and E-waste e.g. collection, segregation, recovery, labeling requirements, storage areas, treatment and disposal facilities. (b)Sources, Composition and characteristic of hazardous waste, Hazardous Waste (Management and Handling) Rules, 1989 and

		of hazardous waste, 76. Land disposal of hazardous waste,	amendments, Federal Hazardous Waste Regulations under RCRA, Superfund, CERCLA and SARA. Toxicology, public health impact, Protocols, issues and challenges in transportation of hazardous waste. (c) Characterization of medical waste- Bio-medical wastes (Management and Handling) Rules, 1998, Amendments and guidelines, segregation, packaging, storage, transport of infectious waste. Techniques of Biomedical waste management. Health and safety rules. Protocols, issues and challenges in transportation of Biomedical waste. (d) Treatment method- Autoclave, Hydroclave, Microwave, Chemical Disinfection, Solidification and stabilization, Bioremediation, Thermal Conversion Technologies, accumulation and storage of hazardous waste, land disposal of hazardous waste, other treatment and disposal method. Common Hazardous Waste Treatment facilities (TSDF) (e) E-waste: Introduction, toxicity due to hazardous substances in e-waste and their impacts, domestic e-waste disposal, e-waste management, technologies for recovery of resource

			from electronic waste, guidelines for environmentally sound management of e-waste, occupational and environmental health perspectives of recycling e-waste in India.
Professional Skill 20 Hrs; Professional Knowledge 04 Hrs	Demonstrate Process to control noise pollution	78. Practice Measurement of noise 79. Process to control noise pollution	**Noise Pollution:** Its causes, types, sources, effects on Human health, how to control noise pollution.
Project work/ Industrial visit			

SYLLABUS FOR CORE SKILLS

1. Employability Skills (Common for all CTS trades) (120 hrs.)

Learning outcomes, assessment criteria, syllabus and Tool List of Core Skills subjects which is common for a group of trades, provided separately in www.bharatskills.gov.in / dgt.gov.in

ANNEXURE-I

List of Tools & Equipment			
HEALTH SAETY & ENVIRONMENT (For batch of 24 Candidates)			
S No.	**Name of the Tools and Equipment**	**Specification**	**Quantity**
A. TRAINEES TOOL KIT (For each additional unit trainees tool kit sl. 1-10 is required additionally)			
1.	Water $C0_2$ Type Fire Extinguisher	9 Liters	08 Nos.
2.	Stored pressure Type Fire Extinguisher	9 Liters	08 Nos.
3.	Chemical Foam type Fire Extinguisher	9 Liters	08 Nos.
4.	Mechanical Foam type Fire Extinguisher	9 Liters	08 Nos.
5.	$C0_2$Type Fire Extinguisher	4.5 Kg	08 Nos.
6.	BC Type Fire Extinguisher	5/10 Kg	06 Nos.
7.	ABC Type Fire Extinguisher	5/10 Kg	06 Nos.
8.	Extension Ladder	Size-45/35 ft	03 Nos.
9.	All types of Branches or Nozzles		04 Nos.
10.	Fire Hose	a) 15m	12 Nos.
		b) 30m	05 Nos.
B. SHOP TOOLS, INSTRUMENTS – For 2 (1+1) units no additional items are required			
Lists of Tools:			
11.	*First Aid Box*		*As required*
12.	*All Types of small gears*		*As required*
13.	*BA Set*	*Negative & Positive Pressure*	*02 Nos.*
14.	*a) Gas Cylinders*		*02 Nos.*
	b) Steel Back Plates		*02 Nos.*
	c) Face Masks		*02 Nos.*
15.	*Portable Fire Pump/TFP*		*02 Nos.*
16.	*All types of couplings*		*1 Set*
17.	*Hydrant-Stand Pipe Type*		*02 Nos.*
18.	*Fire Trays*		*02 Nos.*
19.	*Manual call point*		*01 No*
20.	*Entry Suit/ Proximity Suit*		*02 Nos.*
21.	*Hose reel system*		*01 No*
22.	*Nitrogen Cylinder*		*01 No*
23.	*Hose Box*		*01 No*

24.	*Fire Fighting Point complete Set*		*01 No*
25.	*Suction Hose*	*10 ft*	*02 Nos.*
26.	*Suction Wrench*		*02 Nos.*
27.	*Metal Strainer*		*02 Nos.*
28.	*Basket Strainer*		*01 No*
29.	*Sprinkler*		*02 Nos.*
30.	*Ropes*	*100 ft Long*	*01 No*
31.	*Lines 100 ft Long*		*01 No*
32.	Control Panel – Model-Pump		01 No
33.	Personal Protective Equipment		
	a) Helmet	Type A,B,C	24 Nos.
	b) Laser Welding Safety Goggles		12Nos.
	c) Face Shield		12 Nos.
	d) Welding Shield		12 Nos.
	e) Ear Muff		12 Nos.
	f) Ear Plug		12 Nos.
	g) Canal Caps		12 Nos.
	h) Safety Shoes		24 Nos.
	I) Asbestos Gloves		12 Nos.
	j) Electrical Hand Gloves		12 Nos.
	k) Hand Gloves (Rubber)		12 Nos.
	l) Dust Mask		12 Nos.
34.	Personal Protective Clothing for men		
	a) Safety Shirt		12 Nos.
	b) Safety Trouser		12 Nos.
	c)Safety Jacket		12 Nos.
	d) Cooling Vest		12 Nos.
	e) Gum Boots		12 Nos.
C. LIST OF EQUIPMENT			
35.	Personal Fall Arrest System (PFAS)		02 Nos.
36.	Tripod		02 Nos.
37.	Pulley		02 Nos.
38.	Suspended Scaffold		02 Nos.
39.	Gas Detector		02 Nos.
40.	Plastic Tunnel (Sewer Rescue Drill)		04 Nos.
41.	Instrument for Noise Measurement		04 sets

42.	Autoclave		02 Each
43.	Hydroclave		02 Each
44.	Microwave		02 Each
45.	Chemical Disinfection unit		02 Each
46.	Body Harness		01 No
47.	Collecting Breeching		02 Nos.
48.	Dividing Breeching (Hand control)		02 Nos.
49.	Hydrant Flange		02 Nos.
50.	Hydrant Key & Bar (With hydrant Spindle)		01 No
51.	Adopter for Air Store Pressure		02 Nos.
52.	Hydraulic Pressure Testing Machine		01 No
53.	Sprinklers Head (Bulb Type, Fusible Type)		02 Nos.
54.	Safety Belt		01 No
55.	Desktop computer	CPU: 32/64 Bit i3/i5/i7 or latest processor, Speed: 3 GHz or Higher. RAM: - 4 GB DDR-III or Higher, Wi-Fi Enabled. Network Card: Integrated Gigabit Ethernet, with USB Mouse, USB Keyboard and Monitor (Min. 17 Inch. Licensed Operating System and Antivirus compatible with trade related software.	08Nos.
56.	Computer Table		08 Nos.
57.	Computers Chairs		08 Nos.
58.	White Board		01 No
59.	L.C.D. Projectors		02 Nos.
60.	UPS		As required
61.	All types of Detectors 1 Peps. of each		05Nos.
62.	Flux meter		07Nos.
63.	Dosi meter		01 No
64.	Cut model of Fire Extinguisher / Fire pump		02 Nos.
65.	Fire Suit		02 Nos.
66.	Fire Tender (one For the Institute)		01 No
67.	Rescue Van (one For the Institute)		01 No.
D. Shop Floor Furniture and Materials - For 2 (1+1) units no additional items are required.			
68.	Instructor's table		1 No.

69.	Instructor's chair		2 Nos.
70.	Metal Rack	100cm x 150cm x 45cm	4 Nos.
71.	Lockers with 16 drawers standard size		2 Nos.
72.	Steel Almirah	2.5 m x 1.20 m x 0.5 m	2 Nos.
73.	Black board/white board		1 No.
74.	Fire Extinguisher	Arrange all proper NOCs and equipment from municipal / competent authorities.	

Note:

1. *The items in bold italic are meant to be used for any of the two courses viz. Fireman/Fire Technology and Industrial Safety Management/Health Safety and Environment. If the institute is running any of the two trades, items in bold italic are not required to be purchased separately.*

ANNEXURE-II

The DGT sincerely acknowledges contributions of the Industries, State Directorates, Trade Experts, Domain Experts, trainers of ITIs, NSTIs, faculties from universities and all others who contributed in revising the curriculum.

Special acknowledgement is extended by DGT to the following expert members who had contributed immensely in this curriculum.

List of Expert Members participated/contributed for finalizing the course curriculum of Health, Safety & Environment.			
S No.	**Name & Designation Sh/Mr./Ms.**	**Organization**	**Remarks**
1.	H. V. Samvatsar, Director	CSTARI, Kolkata	Chairman
1.	L.K. Mukherjee, DDT	-Do-	Co-ordinator
2.	Soumitra Chatterjee, MD	Dhruvsatya Centre for personal Transformation Pvt. Ltd.	Expert
3.	Purna Chandra Barad, Chief Manager- HR & Admin	Dhruvsatya Centre for personal Transformation Pvt. Ltd.	Expert
4.	Kanailal Biswas, Ex- Plant in charge	Zamil Steel Tower and Galvanizing factory, Dumman, Soudi Arabia	Expert
5.	Krishnendu Sarkar, Director	Akass Infrastructure pvt. Ltd., Kolkata	Expert
6.	Dipak Rungta, Manager	Lalit Hardware, Expert in Disaster Management power tools &Equipments, Kolkata-1	Expert
7.	N.B. Reshamwal, Asst. Director	Regional Labour Institute, Kolkata	Member
8.	Sourashis Mitra, Junior Assistant	Indian Institute of Engineering, Science and Technology, Shibpur (IIEST), Howrah- 711103	Member
9.	Sujay Banerjee, Senior Instructor	West Bengal Fire & Emergency Services, Seal Para, Kolkata	Expert
10.	Shyam Chandra Mondal, Officer in Charge	West Bengal Fire & Emergency Services, Serampore, Mahesh Hoogly	Expert
11.	R.N. Bandhopadhaya, OSD	Directorate of Industrial Training- Govt. of West Bengal, Kolkata	Member
12.	Alok Sharma, Chief General Manager	Indraprastha Gas Limited, New Delhi	Expert
13.	Santokh Singh, Ex-Chief Fire	Delhi Fire Services, New Delhi	Expert

	Officer		
14.	Capt. Krishan Kumar, Chairman	Delhi Institute of Fire Engineering, New Delhi-77	Expert
15.	Praveen Choudhari, Emergency Response Officer	Dolphin Energy Ltd., Quatar	Expert
16.	Lt. Col. RC Shukla, Principal	Delhi Institute of Fire Engineering, New Delhi-77	Expert
17.	P S Bhadana, Dy. Director	-do-	Expert
18.	B L Chauhan, Senior Instructor	-do-	Expert
19.	Bhagwati Prasad Ojha, HSE Engineer	-do-	Expert
20.	Praveen Kumar Garg, Sr. Manager HSE	Ouippo Oil & Gas Infrastructure Ltd., Gurgaon, Haryana	Expert
21.	Devki Nandan, HSE Expert	Indraprastha Gas Ltd.	Expert
22.	Sanjay Kumar, JDT/HOO	CSTARI, Kolkata	Member
23.	Srinivasu Saraswatula, Dy. Dir. of Trg.	NSTI, Hyderabad	Member
24.	A.K. Mandal, ADT	-do-	Member
25.	M.K. Batabyal, TO	-do-	Member

ABBREVIATIONS

CTS	Craftsmen Training Scheme
ATS	Apprenticeship Training Scheme
CITS	Craft Instructor Training Scheme
DGT	Directorate General of Training
MSDE	Ministry of Skill Development and Entrepreneurship
NTC	National Trade Certificate
NAC	National Apprenticeship Certificate
NCIC	National Craft Instructor Certificate
LD	Locomotor Disability
CP	Cerebral Palsy
MD	Multiple Disabilities
LV	Low Vision
HH	Hard of Hearing
ID	Intellectual Disabilities
LC	Leprosy Cured
SLD	Specific Learning Disabilities
DW	Dwarfism
MI	Mental Illness
AA	Acid Attack
PwD	Person with disabilities


कौशलं बलम्