



Model Curriculum

QP Name: Chemical Effluent Treatment Plant Operator

QP Code: RSC/Q7102

QP Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

Rubber, Chemical & Petrochemical Skill Development Council (RCPSDC) 304, 3rd Floor, Rectangle One, Saket District Center, ceo@rcpsdc.in, New Delhi – 110017 (India) Tel: +91 11 41009347- 48

Table of Contents

| | |
|---|----|
| Training Parameters..... | 2 |
| Program Overview | 3 |
| Training Outcomes..... | 3 |
| Compulsory Modules..... | 3 |
| Module 1: Introduction to Chemical Industry and Role of Chemical Effluent Treatment Plant Operator..... | 6 |
| Module 2: Prepare for Work Requirements | 7 |
| Module 3: Perform Chemical Effluent Treatment Plant Operations | 8 |
| Module 4: Communicate Effectively and Efficiently..... | 10 |
| Module 5: Carry out Housekeeping..... | 11 |
| Module 6: Perform Reporting and Documentation Activities..... | 12 |
| Module 7: Maintain Health and Safety..... | 14 |
| Module 8: Manage Chemical Hazards in the Workplace..... | 15 |
| Module 9: Follow ethical and sustainable practices at workplace..... | 17 |
| Module 10: Employability Skills (60 hours)..... | 19 |
| Trainer Requirements | 22 |
| Master Trainer Requirements..... | 23 |
| Module 10: On-the-Job Training..... | 25 |
| Annexure..... | 27 |
| Trainer Requirements | 27 |
| Assessor Requirements..... | 28 |
| Assessment Strategy | 29 |
| References | 31 |
| Glossary..... | 31 |
| Acronyms and Abbreviations..... | 32 |

Training Parameters

| | |
|-------------------|---------------------------------|
| Sector | Chemical & Petro-chemical (CPC) |
| Sub-Sector | Chemical |

| | |
|---|---|
| Occupation | Manufacturing/process |
| Country | India |
| NSQF Level | 4 |
| Aligned to NCO/ISCO/ISIC Code | NCO-2015/ 3132.0400 |
| Minimum Educational Qualification and Experience | Completed 2nd year of 3-year diploma (after 10th) and pursuing regular diploma in science stream OR 12th grade pass (Science) OR 10th grade pass plus 2-year NTC plus 1 year NAC OR 8th pass plus 2-year NTC plus 1-Year NAC plus CITS OR Certificate NSQF (Level 3-Chemical Plant Assistant Operator/Chemical Maintenance Plant Assistant Operator) with minimum education as 8th grade pass with 3 years of relevant experience |
| Pre-Requisite License or Training | NA |
| Minimum Job Entry Age | 18 years |
| Last Reviewed On | 29/03/2023 |
| Next Review Date | 29/03/2026 |
| NSQC Approval Date | 29/03/2023 |
| QP Version | 1.0 |
| Model Curriculum Creation Date | 29/03/2023 |
| Model Curriculum Valid Up to Date | 29/03/2026 |
| Model Curriculum Version | 1.0 |
| Minimum Duration of the Course | 540 Hours, 0 Minutes |
| Maximum Duration of the Course | 540 Hours, 0 Minutes |

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner will be able to:

- Demonstrate how to undertake chemical effluent treatment plant operations
- Employ suitable practices to communicate effectively with colleagues, and superiors to achieve a smooth workflow
- Describe the housekeeping activities related to the job role
- Apply appropriate practices to follow reporting and documentation standards
- Describe the health, hygiene, safety, and quality standards to be applicable as per the standards
- Show how to manage chemical hazards in the workplace
- Apply proper practices to follow ethical and sustainable practices at the workplace
- Develop employability skills

Compulsory Modules

The table lists the modules, their duration and mode of delivery.

| NOS and Module Details | Theory Duration | Practical Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
|---|-----------------|--------------------|--|--|----------------|
| RSC/N7101: Undertake Chemical Effluent Treatment Plant Operations NOS Version No. 1.0 NSQF Level 4 | 105:00 | 165:00 | 00:00 | 00:00 | 270:00 |
| Module 1: : Introduction to Chemical Industry and Role of Chemical Effluent Treatment Plant Operator | 07:30 | 00:00 | 00:00 | 00:00 | 07:30 |
| Module 2: Prepare for Work Requirements | 40:30 | 80:00 | 00:00 | 00:00 | 120:30 |
| Module 3: Perform Chemical Effluent Treatment Plant Operations | 57:00 | 85:00 | 00:00 | 00:00 | 142:00 |
| RSC/N5610- Coordinate and Communicate Effectively at the Workplace | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |

| | | | | | |
|---|--------------|--------------|--------------|--------------|--------------|
| NOS Version No. 1.0 | | | | | |
| NSQF Level 4 | | | | | |
| Module 4: Communicate Effectively and Efficiently | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |
| RSC/N5001– Carry out Housekeeping NOS Version No. 3.0 NSQF Level 4 | 07:30 | 07:30 | 00:00 | 00:00 | 15:00 |
| Module 5: Housekeeping | 07:30 | 07:30 | 00:00 | 00:00 | 15:00 |
| RSC/N5002– Carry Out Reporting and Documentation NOS Version No. 3.0 NSQF Level 4 | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |
| Module 6: Perform Reporting and Documentation Activities | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |
| RSC/N5007– Carry out Health and Safety NOS Version No. 3.0 NSQF Level 4 | 07:30 | 07:30 | 00:00 | 00:00 | 15:00 |
| Module 7: Maintain Health and Safety | 07:30 | 07:30 | 00:00 | 00:00 | 15:00 |
| RSC/N5614 - Manage Chemical Hazards in the Workplace NOS Version No. 1.0 NSQF Level 4 | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |
| Module 8: Manage Chemical Hazards in the Workplace | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |
| RSC/N5603 – Follow Ethical and Sustainable Practices at Workplace Version No. 1.0 NSQF Level 4 | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |

| | | | | | |
|--|---------------|---------------|--------------|--------------|---------------|
| Module 9: Ethical and Sustainable Practices at Workplace | 15:00 | 15:00 | 00:00 | 00:00 | 30:00 |
| DGT/VSQ/N0102: Employability Skills (60 Hours) | 30:00 | 30:00 | 00:00 | 00:00 | 60:00 |
| Module 10: Employability Skills | 30:00 | 30:00 | 00:00 | 00:00 | 60:00 |
| OJT | 00:00 | 00:00 | 60:00 | 00:00 | 60:00 |
| Total Duration | 210:00 | 270:00 | 60:00 | 00:00 | 540:00 |

Module Details

Module 1: Introduction to Chemical Industry and Role of Chemical Effluent Treatment Plant Operator

Bridge Module

Terminal Outcomes:

- Outline the overview of Skill India Mission
- Describe the scope of the Chemical Industry
- Define the roles and responsibilities of an Chemical Effluent Treatment Plant Operator

| | |
|---|--|
| Duration: 07:30 | Duration: 00:00 |
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Discuss the objectives and benefits of the Skill India Mission • Describe the scope of the Chemical Industry and its sub-sectors • Discuss job role and opportunities for Chemical Effluent Treatment Plant Operator • Elaborate the basic terminology used in the Chemical & Petrochemical sector | NA |
| Classroom Aids | |
| Whiteboard, Flip Chart, Markers, Duster, Projector, Laptop with charger, Projector screen, Power Point Presentation, 2.1 Laptop External Speakers. | |
| Tools, Equipment and Other Requirements | |
| NA | |

Module 2: Prepare for Work Requirements

Mapped to RSC/N7101, v 1.0

Terminal Outcomes:

- Perform steps to obtain the work schedule and other relevant details from the supervisor
- Apply proper methods to lubricate pumps, valves, and other equipment
- Role play on how to inform the supervisor regarding issues or problems in setting chemical effluent treatment plant parameters
- Explain the methods to prepare the chemicals for the treating wastewater

| Duration: 40:30 | Duration: 80:00 |
|---|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Discuss different types of chemicals and disinfect required for water treatment • Explain the procedure to interpret process related documents and process and equipment required for the chemical effluent treatment • Describe the methods of identifying the process and equipment required for the chemical wastewater treatment • Explain the methods to prepare the chemicals for the treating wastewater • State the significance of ensuring the working condition and availability of all equipment and chemicals in the plant as per requirement • Outline the importance of ensuring that tanks, basin and filter beds are cleaned on periodic basis as per the SOP • Discuss the various critical spare parts for continuous operation of the plant • Explain the standard procedure to escalate issues/problems to the supervisor | <ul style="list-style-type: none"> • Perform steps to obtain the work schedule and other relevant details from the supervisor • Show how to repair or replace the damaged equipment • Apply proper methods to lubricate pumps, valves, and other equipment and set the plant machinery parameters as per the chemical effluent available for treatment • Employ appropriate practices to ensure the availability of critical spare parts for continuous operation of the plant • Role play on how to inform the supervisor regarding issues or problems in setting chemical effluent treatment plant parameters |
| Classroom Aids | |

Training kit (Trainer guide, Presentations), White board, Marker, Projector screen, Laptop with charger, Participant Handbook and Related Standard Operating Procedures, 2.1 Laptop External Speakers

Tools, Equipment and Other Requirements

Sample work schedule and other relevant details, Required pumps, valves, equipment, spare parts etc.

Module 3: Perform Chemical Effluent Treatment Plant Operations

Mapped to RSC/N7101, v 1.0

Terminal Outcomes:

- Apply proper process to add chemicals such as ammonia, chlorine, or lime to disinfect and deodorize water and other liquids to disinfect water
- Apply proper methods to control the equipment and monitor processes that remove or destroy harmful materials, chemicals, and microorganisms from wastewater
- Demonstrate how to operate and adjust equipment controls to purify and clarify water as well as process and dispose of wastes
- Apply proper practices to ensure the water quality monitoring before, during, and after treatment

| Duration: 57:00 | Duration: 85:00 |
|--|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Explain the methods to operate and maintain a wastewater treatment plant • Describe the importance of inspection of machinery and maintaining surveillance on operating conditions, gauges and meters • Explain the methods of taking readings from hand-held meters, control panels, or computer screens, check water and wastewater samples, and keeping accurate records, as applicable • State the significance of changing out the chlorine and sulfur dioxide cylinders for chlorinating/dechlorinating units | <ul style="list-style-type: none"> • Apply proper process to add chemicals such as ammonia, chlorine, or lime to disinfect and deodorize water and other liquids to disinfect water • Employ appropriate methods to maintain the pumps and motors that move water and wastewater through filtration systems • Apply proper methods to control the equipment and monitor processes that remove or destroy harmful materials, chemicals, and microorganisms from wastewater • Show how to operate small rotating biological contractor plant that utilize activated sludge with sand filters and UV disinfection to process wastewater |

- Describe the methods to collect samples and run tests to determine the quality of the water
- Explain the methods of interpreting the results of sample analysis and adjust equipment parameters, as necessary

- Apply proper process to disinfect and deodorize water with minimal environmental impact by introducing cleaning and treatment substances into the plant's systems
- Demonstrate how to operate and adjust equipment controls to purify and clarify water as well as process and dispose of wastes
- Apply proper practices to ensure the water quality monitoring before, during, and after treatment

Classroom Aids

Training kit (Trainer guide, Presentations), White board, Marker, Projector screen, Laptop with charger, Participant Handbook and Related Standard Operating Procedures, 2.1 Laptop External Speakers

Tools, Equipment and Other Requirements

Required chemicals such as ammonia, chlorine, or lime, pumps motor, rotating biological contractor plant, equipment etc.

Module 4: Communicate Effectively and Efficiently

Mapped to RSC/N5610 v 1.0

Terminal Outcomes:

- Elaborate the professional protocols and etiquette of effective communication at the workplace
- Discuss the standard policies on behavioural etiquette, professionalism and gender sensitive service practices at workplace

| Duration: 15:00 | Duration: 15:00 |
|--|---|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Explain the standard policies on behavioural etiquette, professionalism and gender sensitive service practices at workplace and standard hierarchy and reporting structure • Discuss effective ways of team coordination • List the key helpline numbers • State the significance of listening, responding, trusting, supporting and respecting all colleagues and seniors • Outline the importance of maintaining clarity, honesty and transparency while communicating with the seniors and colleagues as well as seeking clarification on the information provided by seniors • Discuss the importance of complying with standard policies and procedures for team work and respecting the personal and professional space of colleagues and superiors | <ul style="list-style-type: none"> • Role play on how interact with colleagues and seniors in a polite and professional manner, listen actively to the issues or requirements of colleagues and respond timely and appropriately • Dramatize how to pass on essential information to the colleagues timely and coordinate with seniors on work-related and behavioural feedback • Role play on how to report the status of work in the desired format as per the schedule to seniors and inform about any deviations or anomalies • Dramatize on how to coordinate and support maintenance/engineering team and environmental health and safety (EHS) team and other department for smooth work process • Role play on how to provide inputs to the concerned stakeholders for reviewing and detect non-compliance |
| Classroom Aids | |
| Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, Presentation, Participant Handbook and Related Standard Operating Procedures | |
| Tools, Equipment and Other Requirements | |
| Sample of escalation matrix, Organisation structure | |

Module 5: Carry out Housekeeping

Mapped to RSC/N5001, v3.0

Terminal Outcomes:

- Explain the different aspects of housekeeping for workarea.
- Describe the housekeeping activities to be done to clean the workarea.
- List the benefits of implementing '5S' in workarea.

| Duration: 07:30 | Duration: 07:30 |
|---|---|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Describe what is housekeeping • Explain the importance of housekeeping in storage area • List the cleaning equipment and chemicals used for cleaning process • Identify various safety boards/ signs placed on the shop floor • Discuss the importance of adequate ventilation during cleaning work • Discuss the importance of monitoring and supervising the cleaning activities • Describe what is '5S' • Define each 'S' and its meaning • Discuss the necessary precautions to avoid any hazard and accident during cleaning activities • Discuss the documents and records needed to be maintained and updated related to cleaning activities done | <ul style="list-style-type: none"> • Demonstrate how to inspect the area for cleaning purpose • Apply appropriate ways to check the working condition of cleaning equipment • Demonstrate the cleaning process of creel room area and equipment with the specified cleaning aid and chemicals • Prepare a sample report related to issues occur during cleaning activities and for requirement of any additional cleaning at workarea • Apply appropriate ways to check that workarea is cleaned properly after completion of cleaning activities • Show how to return back the cleaning equipment and material to store after completion of work • Show how to dispose the waste material properly as per the organisation's policies and environmental regulations |
| Classroom Aids: | |
| White board and marker or blackboard and chalk, duster, laptop or desktop computer and projector, flipcharts, participant handbook | |
| Tools, Equipment and Other Requirements | |
| Cleaning rags, cleaning brush, broom, mop, cleaning chemicals, floor cleaning machine, personal protective equipment (PPE) - safety gloves, safety goggles, safety shoes, mask | |

Module 6: Perform Reporting and Documentation Activities

Mapped to RSC/N5002, v 3.0

Terminal Outcomes:

- Describe the procedure of recording and documentation as per standards
- Discuss the procedure of maintaining confidentiality of information
- Prepare the sample damage report, breakage report, etc.

| Duration: 15:00 | Duration: 15:00 |
|--|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Elaborate the standard health, safety and environment guidelines, legislation and regulations and company's HR instructions along with implications of not following the organizational requirement for approval, for undertaking specific tasks etc. and actions to be taken in case of non-conformity to behavioural standards of the organization • Discuss the significance of learning proper procedures and techniques, appropriate training on the subject and completing the activities as per schedule along with the implications of not following the standard procedures, work instructions, etc. • Elaborate the standard procedure of rectifying and solving any issues/conflicts and importance of attending troubleshooting processes • Discuss different methods of recording information • Explain various types of documents, the procedure tolls and tackle to maintain the same as a part of the job role, importance of completing the report timely accurately and correctly as well as the actions to be taken if the documents are not correct • Elaborate the procedures of reporting | <ul style="list-style-type: none"> • Dramatize a situation on how to report data/ problems/ incidents to the appropriate authority as per the standard • Apply appropriate practices to identify various documentation to be completed relating to one's role • Demonstrate how to record details accurately in the standard format within the stipulated time • Apply appropriate practices to prepare the final documents as per standards and requirements and make the documents available for the inspection by the appropriate authorities • Prepare the sample reports for damage, breakage, etc. • Roleplay on how to respond to the requests for information as per the standard • Roleplay a situation to inform the proper authority about the requests received for information as per the standards • Dramatize a situation on how to report the incidents where standard operating procedures are not followed |

| | |
|---|--|
| <p>to the appropriate authority</p> <ul style="list-style-type: none"> • Discuss the procedure and importance of maintaining the security and confidentiality of recorded information as well as the methods for responding to requests for information • Explain the reporting procedures to follow before disclosing information to any outside party | |
| Classroom Aids | |
| Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, Presentation, Participant Handbook and Related Standard Operating Procedures | |
| Tools, Equipment and Other Requirements | |
| Sample breakage report, Sample damage report, Required form and format, etc. | |

Module 7: Maintain Health and Safety

Mapped to RSC/N5007, v3.0

Terminal Outcomes:

- List the potential hazards in a storage area of rubber industry.
- Outline the safety plan during emergency while working in storage area.

| | |
|--|---|
| Duration: 07:30 | Duration: 07:30 |
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Explain the health and safety requirements in storage facility • Discuss organisational procedures for health, safety and security and individual role and responsibilities related to the same • Describe the ill-effects of improper storage conditions in storage area • List the safety arrangement available in storage area • Outline the requirements of Personal Protective Equipment (PPE) during storage operations • State details of common injuries which can occur while working in a storage area • Recall the constituents of a first aid box used in industry | <ul style="list-style-type: none"> • Demonstrate the use of the given Personal Protective Equipment (PPE) • Demonstrate how to handle fire emergencies through a role play • Demonstrate how to use a multi-purpose fire extinguisher on simulated fire • Select the fire extinguisher from the given fire extinguishers, for the specified fire type and class • Demonstrate first aid procedure for a given injury |
| Classroom Aids: | |
| White board and marker or blackboard and chalk, duster, laptop or desktop computer and projector, flipcharts, participant handbook | |
| Tools, Equipment and Other Requirements | |
| Sample of PPEs – safety helmet, safety goggle, safety shoes, safety gloves, mask, earmuff, first aid box, fire extinguisher, eye-wash station. | |

Module 8: Manage Chemical Hazards in the Workplace

Mapped to RSC/N5614, v 1.0

Terminal Outcomes:

- Explain the methods of identifying the hazards and risks associated with chemicals with the help of safety data sheet
- Show how to use appropriate Personal Protective Equipment (PPE) as per work requirements
- Apply proper methods to carryout the risk assessment and work according to the recommended safe practices
- Outline the importance of following the guidelines to collect, segregate and dispose chemicals waste into appropriate containers based on their toxicity or hazardous nature

| Duration: 15:00 | Duration: 15:00 |
|--|--|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Discuss different types of chemicals hazards and levels of risks • Explain the methods of identifying the hazards and risks associated with chemicals with the help of safety data sheet • Discuss different types of PPE like overalls and aprons, gloves, chemical resistant glasses, respiratory protection, boots etc. • Describe the different types of labels, like dangerous to the environment, explosive , toxic , flammable, corrosive etc. • Explain the risk assessment procedure and principle of risk control hierarchy • State the significance of following the guidelines to handle chemicals and to protect self and others from chemical hazards • Explain the importance of ensuring that workplace has well-ventilated and safe chemical storage areas with safety cabinets suited to each substance as | <ul style="list-style-type: none"> • Show how to use appropriate Personal Protective Equipment (PPE) as per work requirements • Apply proper methods to carryout the risk assessment and work according to the recommended safe practices • Apply proper procedure to identify and report any chemical hazards, risks or breaches in site safety to the appropriate authority |

| | |
|--|--|
| <p>well as isolating the hazardous substances in separate storage areas</p> <ul style="list-style-type: none"> ● Outline the importance of following the guidelines to collect, segregate and dispose chemicals waste into appropriate containers based on their toxicity or hazardous nature ● Explain the importance of following safe evacuation and emergency procedure in the event of chemical accidents/emergencies | |
| Classroom Aids | |
| Training kit (Trainer guide, Presentations), White board, Marker, Projector screen, Laptop with charger, Participant Handbook and Related Standard Operating Procedures, 2.1 Laptop External Speakers | |
| Tools, Equipment and Other Requirements | |
| Sample safety data sheet, report format, required PPE like overalls and aprons, gloves, chemical resistant glasses, respiratory protection, boots etc. | |

Module 9: Follow ethical and sustainable practices at workplace

Mapped to RSC/N5603, v1.0

Terminal Outcomes:

- Apply material and energy conservation practices at the workplace.
- Apply sensitivity while interacting with different genders and people with disabilities.

| Duration: 15:00 | Duration: 15:00 |
|---|---|
| Theory – Key Learning Outcomes | Practical – Key Learning Outcomes |
| <ul style="list-style-type: none"> • Discuss organisational policies for usage of alternate energy source, such as solar energy, for the site • Discuss the importance of efficient utilisation of fuels, material, water and energy/ electricity • Explain the processes to optimize usage of fuels, material, water and energy/ electricity • Enlist common practices for conserving electricity at workplace • Discuss the significance of greening • Classify different categories of waste for the purpose of segregation • Differentiate between hazardous, recyclable and non-recyclable waste • Discuss various methods of waste collection and disposal • Discuss the importance of completing tasks on time • Discuss the ways to adjust the communication styles to reflect sensitivity towards gender and persons with disability (PwD) • Discuss gender-based concepts, issues and legislation as well organization standards, guidelines, rights and duties of PwD • Discuss the importance of PwD and gender sensitization • State the importance of following organizational standards and guidelines related to PwD | <ul style="list-style-type: none"> • Employ practices for efficient utilization of fuels, material, water and energy/ electricity • Apply appropriate ways to prevent soil erosion during plantation and other related activities • Demonstrate proper waste collection and disposal mechanism depending upon types of waste • Apply appropriate ways to organise storage of recyclable and reusable material at identified location • Employ different means and methods of communication depending upon the requirement to interact with the team members • Demonstrate how to communicate with different genders and persons with disability (PwD) in a sensitive manner • Role play a situation on how to offer help to people with disability (PwD) if required at work |
| Classroom Aids: | |
| White board and marker or blackboard and chalk, duster, laptop or desktop computer and projector, flipcharts, participant handbook | |
| Tools, Equipment and Other Requirements | |

Defective raw material, defective components, personal protective equipment (PPE) - safety gloves, safety goggles, safety shoes, mask.

Module 10: Employability Skills (60 hours)

Model Curriculum

Module Summary:

| S. No | Module Name | Duration (hours) | Assessment Marks |
|-------|---|------------------|------------------|
| 1. | Introduction to Employability Skills | 1.5 | 2 |
| 2. | Constitutional values - Citizenship | 1.5 | 2 |
| 3. | Becoming a Professional in the 21st Century | 2.5 | 6 |
| 4. | Basic English Skills | 10 | 6 |
| 5. | Career Development & Goal Setting | 2 | 3 |
| 6. | Communication Skills | 5 | 4 |
| 7. | Diversity & Inclusion | 2.5 | 2 |
| 8. | Financial and Legal Literacy | 5 | 5 |
| 9. | Essential Digital Skills | 10 | 8 |
| 10. | Entrepreneurship | 7 | 4 |
| 11. | Customer Service | 5 | 3 |
| 12. | Getting Ready for Apprenticeship & Jobs | 8 | 5 |
| | Total | 60 | 50 |

Key Learning Outcomes

Introduction to Employability Skills Duration: 1.5 Hours

After completing this programme, participants will be able to:

1. Discuss the Employability Skills required for jobs in various industries
2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship Duration: 1.5 Hours

3. Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century Duration: 2.5 Hours

5. Discuss importance of relevant 21st century skills.
6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
7. Describe the benefits of continuous learning.

Basic English Skills Duration: 10 Hours

8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
9. Read and interpret text written in basic English
10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills Duration: 5 Hours

- 19| Chemical Effluent Treatment Plant Operator

12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion Duration: 2.5 Hours

15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy Duration: 5 Hours

17. Outline the importance of selecting the right financial institution, product, and service
18. Demonstrate how to carry out offline and online financial transactions, safely and securely
19. List the common components of salary and compute income, expenditure, taxes, investments etc.
20. Discuss the legal rights, laws, and aids

Essential Digital Skills Duration: 10 Hours

21. Describe the role of digital technology in today's life
22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
24. Create sample word documents, excel sheets and presentations using basic features
25. utilize virtual collaboration tools to work effectively

Entrepreneurship Duration: 7 Hours

26. Explain the types of entrepreneurship and enterprises
27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
29. Create a sample business plan, for the selected business opportunity

Customer Service Duration: 5 Hours

30. Describe the significance of analyzing different types and needs of customers
31. Explain the significance of identifying customer needs and responding to them in a professional manner.
32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs Duration: 8 Hours

33. Create a professional Curriculum Vitae (CV)
34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
35. Discuss the significance of maintaining hygiene and confidence during an interview
36. Perform a mock interview
37. List the steps for searching and registering for apprenticeship opportunities

Trainer Requirements

| Trainer Prerequisites | | | | | | |
|--|--|------------------------------|-----------------|---------------------|---------------------|---|
| Minimum Educational Qualification | Specialization | Relevant Industry Experience | | Training Experience | | Remarks |
| | | Year s | Specializati on | Year s | Specializati on | |
| Graduate/CITS | Any discipline | | | 2 | Teaching experience | Prospective ES trainer should: <ul style="list-style-type: none"> • have good communication skills • be well versed in English • have digital skills • have attention to detail • be adaptable have willingness to learn |
| Current ITI trainers | Employability Skills Training (3 days full-time course done between 2019-2022) | | | | | |
| Certified current EEE trainers (155 hours) | from Management SSC (MEPSC) | | | | | |
| Certified Trainer | Qualification Pack: Trainer (MEP/Q0102) | | | | | |

| Trainer Certification | |
|---|------------------------|
| Domain Certification | Platform Certification |
| Certified in 60-hour Employability NOS (2022), with a minimum score of 80% OR Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of 80% | NA |

Master Trainer Requirements

| Master Trainer Prerequisites |
|------------------------------|
|------------------------------|

| Minimum Educational Qualification | Specialization | Relevant Industry Experience | | Training Experience | | Remarks |
|-----------------------------------|---|------------------------------|----------------|---------------------|---|---|
| | | Years | Specialization | Years | Specialization | |
| Graduate/CITS | Any discipline | | | 3 | Employability Skills curriculum training experience with an interest to train as well as orient other peer trainers | Prospective ES Master trainer should: <ul style="list-style-type: none"> • have good communication skills • be well versed in English • have basic digital skills |
| Certified Master Trainer | Qualification Pack: Master Trainer (MEP/Q2602 | | | 3 | EEE training of Management SSC (MEPSC) (155 hours) | <ul style="list-style-type: none"> • have attention to detail • be adaptable • have willingness to learn • be able to grasp concepts fast and is creative with teaching practices and likes sharing back their learning with others |

| Master Trainer Certification | |
|---|------------------------|
| Domain Certification | Platform Certification |
| <p>Certified in 60-hour Employability NOS (2022), with a minimum score of 90%.</p> <p>OR</p> <p>Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of 90%</p> | NA |

Assessment Strategy

The trainee will be tested for the acquired skill, knowledge and attitude through formative/summative assessment at the end of the course and as this NOS and MC is adopted across sectors and qualifications, the respective AB can conduct the assessments as per their requirements

LIST OF TOOLS & EQUIPMENT FOR EMPLOYABILITY SKILLS

| S No. | Name of the Equipment | Quantity |
|---|--|-------------|
| 1. | Computer (PC) with latest configurations - and Internet connection with standard operating system and standard word processor and worksheet software (Licensed) (all software should either be latest version or one/two version below) | As required |
| 2. | UPS | As required |
| 3. | Scanner cum Printer | As required |
| 4. | Computer Tables | As required |
| 5. | Computer Chairs | As required |
| 6. | LCD Projector | As required |
| 7. | White Board 1200mm x 900mm | As required |
| <i>Note: Above Tools & Equipment not required, if Computer LAB is available in the institute.</i> | | |

Module 10: On-the-Job Training

Mapped to Chemical Effluent Treatment Plant Operator

| | |
|--|------------------------------------|
| Mandatory Duration: 60:00 | Recommended Duration: 00:00 |
| Location: On Site | |
| Terminal Outcomes <ul style="list-style-type: none"> • Perform steps to obtain the work schedule and other relevant details from the supervisor • Show how to repair or replace the damaged equipment • Apply proper methods to lubricate pumps, valves, and other equipment and set the plant machinery parameters as per the chemical effluent available for treatment • Employ appropriate practices to ensure the availability of critical spare parts for continuous operation of the plant • Role play on how to inform the supervisor regarding issues or problems in setting chemical effluent treatment plant parameters • Apply proper process to add chemicals such as ammonia, chlorine, or lime to disinfect and deodorize water and other liquids to disinfect water • Employ appropriate methods to maintain the pumps and motors that move water and wastewater through filtration systems • Apply proper methods to control the equipment and monitor processes that remove or destroy harmful materials, chemicals, and microorganisms from wastewater • Show how to operate small rotating biological contractor plant that utilize activated sludge with sand filters and UV disinfection to process wastewater • Apply proper process to disinfect and deodorize water with minimal environmental impact by introducing cleaning and treatment substances into the plant's systems • Demonstrate how to operate and adjust equipment controls to purify and clarify water as well as process and dispose of wastes • Apply proper practices to ensure the water quality monitoring before, during, and after treatment • Role play on how interact with colleagues and seniors in a polite and professional manner, listen actively to the issues or requirements of colleagues and respond timely and appropriately • Dramatize how to pass on essential information to the colleagues timely and coordinate with seniors on work-related and behavioural feedback • Role play on how to report the status of work in the desired format as per the schedule to seniors and inform about any deviations or anomalies | |

- Dramatize on how to coordinate and support maintenance/engineering team and environmental health and safety (EHS) team and other department for smooth work process
- Role play on how to provide inputs to the concerned stakeholders for reviewing and detect non-compliance
- Demonstrate how to inspect the area for cleaning purpose
- Apply appropriate ways to check the working condition of cleaning equipment
- Demonstrate the cleaning process of creel room area and equipment with the specified cleaning aid and chemicals
- Prepare a sample report related to issues occur during cleaning activities and for requirement of any additional cleaning at workarea
- Apply appropriate ways to check that workarea is cleaned properly after completion of cleaning activities
- Show how to return back the cleaning equipment and material to store after completion of work
- Show how to dispose the waste material properly as per the organisation's policies and environmental regulations
- Dramatize a situation on how to report data/ problems/ incidents to the appropriate authority as per the standard
- Apply appropriate practices to identify various documentation to be completed relating to one's role
- Demonstrate how to record details accurately in the standard format within the stipulated time
- Apply appropriate practices to prepare the final documents as per standards and requirements and make the documents available for the inspection by the appropriate authorities
- Prepare the sample reports for damage, breakage, etc.
- Roleplay on how to respond to the requests for information as per the standard
- Roleplay a situation to inform the proper authority about the requests received for information as per the standards
- Dramatize a situation on how to report the incidents where standard operating procedures are not followed
- Demonstrate the use of the given Personal Protective Equipment (PPE)
- Demonstrate how to handle fire emergencies through a role play
- Demonstrate how to use a multi-purpose fire extinguisher on simulated fire

- Select the fire extinguisher from the given fire extinguishers, for the specified fire type and class
- Demonstrate first aid procedure for a given injury
- Employ practices for efficient utilization of fuels, material, water and energy/ electricity.
- Apply appropriate ways to prevent soil erosion during plantation and other related activities
- Demonstrate proper waste collection and disposal mechanism depending upon types of waste
- Apply appropriate ways to organise storage of recyclable and reusable material at identified location
- Employ different means and methods of communication depending upon the requirement to interact with the team members
- Demonstrate how to communicate with different genders and persons with disability (PwD) in a sensitive manner
- Role play a situation on how to offer help to people with disability (PwD) if required at work

Annexure

Trainer Requirements

| Trainer Prerequisites | | | | | | |
|-----------------------------------|---------------------------|------------------------------|-----------------|---------------------|----------------|-------------------------------|
| Minimum Educational Qualification | Specialization | Relevant Industry Experience | | Training Experience | | Remarks |
| | | Year s | Specialization | Year s | Specialization | |
| Diploma | Any stream in Engineering | 5 | Relevant Domain | 0 | NA | Training experience preferred |

| Trainer Certification | |
|--|---|
| Domain Certification | Platform Certification |
| Certified for a Job Role “Chemical Effluent Treatment Plant Operator” mapped to Qualification Pack: “RSC/Q7102, v1.0 with minimum accepted score of 80%. | Recommended that the Trainer is certified for the Job Role “Trainer (VET and Skills)”, mapped to the Qualification Pack: “MEP/Q2601, v2.0” with minimum score of 80%. |

| Assessor Prerequisites | | | | | | |
|-----------------------------------|---------------------------|------------------------------|-----------------|---------------------|----------------|---------|
| Minimum Educational Qualification | Specialization | Relevant Industry Experience | | Training Experience | | Remarks |
| | | Years | Specialization | Years | Specialization | |
| Diploma | Any stream in Engineering | 5 | Relevant Domain | 0 | NA | NA |

| Assessor Certification | |
|---|--|
| Domain Certification | Platform Certification |
| Job Role “Chemical Effluent Treatment Plant Operator”, mapped to the Qualification Pack RSC/Q7102, v1.0 with minimum accepted score of 80%. | Recommended that the Assessor is certified for the Job Role “Assessor (VET and SKILLS)”, mapped to the Qualification Pack: “MEP/Q2701, v2.0” with minimum score of 80% |

Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

1. Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records
- If the batch size is more than 30, then there should be 2 Assessors.

2. Testing Environment: Assessor must:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:

- Question papers created by the Subject Matter Experts (SME)
- Question papers created by the SME should be verified by the other subject Matter Experts along with the approval required from SSC
- Questions are mapped with NOS and PC
- Question papers are prepared considering that level 1 to 3 is for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
- Assessor must be ToA certified
- Assessment agency must follow the assessment guidelines to conduct the assessment

4. Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location

- Centre photographs with signboards and scheme specific branding
 - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
 - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos
5. Method of verification or validation:
- Surprise visit to the assessment location
 - Random audit of the batch
 - Random audit of any candidate
6. Method for assessment documentation, archiving, and access
- Hard copies of the documents are stored
 - Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage and are stored in the Hard Drives

References

Glossary

| Term | Description |
|------------------------------|---|
| Declarative Knowledge | Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem. |
| Key Learning Outcome | Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application). |
| OJT (M) | On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site |
| OJT (R) | On-the-job training (Recommended); trainees are recommended the specified hours of training on site |
| Procedural Knowledge | Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills. |
| Training Outcome | Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training . |
| Terminal Outcome | Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module . A set of terminal outcomes help to achieve the training outcome. |

Acronyms and Abbreviations

| | |
|-------------|---|
| NOS | National Occupational Standard(s) |
| NSQF | National Skills Qualifications Framework |
| QP | Qualifications Pack |
| TVET | Technical and Vocational Education and Training |
| SOP | Standard operating procedure |
| UV | Ultraviolet |
| PPE | Personal Protective Equipment |
| PwD | Person with Disability |