Model Curriculum

QP Name: Analytical Instruments Operator (Chemical & Petrochemical)

QP Code: RSC/Q7201

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

Sector	Chemical & Petro-chemical (CPC)
Sub-Sector	Chemical
Occupation	Research and development
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/ 2113.0500
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 perform chemical instrumental analysis
- 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/N7201: Perform Chemical Instrumental Analysis **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 Analytical Instruments Operator	07:30	00:00	00:00	00:00	07:30

(Chemical & Petrochemical)					
Module 2: Perform Pre-chemical Analysis Activities	40:30	100:00	00:00	00:00	140:30
Module 3: Perform Chemical Instrumentation Analysis	57:00	65:00	00:00	00:00	122:00
RSC/N5610- Coordinate and Communicate Effectively at the Workplace **NOS Version No. 1.0** **NSQF Level 4**	**15:00**	**15:00**	**00:00**	**00:00**	**30:00**
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	**15:00**	**15:00**	**00:00**	**00:00**	**30:00**

NOS Version No. 1.0 **NSQF Level 4**					
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 Analytical Instruments Operator (Chemical & Petrochemical)

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 Analytical Instruments Operator (Chemical & Petrochemical)

Duration: *07:30*	**Duration**: *00:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• 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 Analytical Instruments Operator (Chemical & Petrochemical) • 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: Perform Pre-chemical Analysis Activities

Mapped to RSC/N7201, v 1.0

Terminal Outcomes:

- Perform steps to obtain the work schedule and other relevant details from the supervisor
- Demonstrate how to inspect analytical testing equipment for proper functioning to achieve desired accuracy and precision
- Draft a sample for testing as per the instructions
- Discuss the standard procedure to clean and maintain the analytical instrument used for the test

Duration: *40:30*	**Duration**: *100:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the methods of interpreting documents related to the chemicals or substances to identify test requirement • Discuss the sampling techniques • Explain the different analytical methods and instruments such as GC-MS, HPLC, etc. • Describe the methods of identifying the process and analytical instruments required to conduct test • Explain the methods of determining the sampling plan for choosing the sample for testing • Discuss the standard procedure to clean and maintain the analytical instrument used for the test •	• Perform steps to obtain the work schedule and other relevant details from the supervisor • Show how to select appropriate test method such as qualitative or quantitative • Demonstrate how to inspect analytical testing equipment for proper functioning to achieve desired accuracy and precision • Perform steps to obtain lab glassware, lab test equipment, lab chemicals required for test • Apply proper methods to calibrate the test equipment as per the standards • Draft a sample for testing as per the instructions • Employ appropriate methods to set the test parameters required for carrying the analytical test
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, Required analytical testing equipment, lab test equipment, chemicals etc., Sample for testing	

Module 3: Perform Chemical Instrumentation Analysis

Mapped to RSC/N7201, v 1.0

Terminal Outcomes:

- Show how to perform chemical testing using analytical instrumentation including HPLC, LC-MS, ICP-OES, Karl-Fischer auto titrator, Abel's flashpoint apparatus, etc.
- Apply proper process to conduct experiments under defined conditions to verify/reject various types of hypotheses using refined scientific methods
- Employ proper methods to monitor and analyze data from analytical tests
- Apply standard procedure to maintain the accurate lab notebooks and complete all related analytical reports, write summaries, and keep proper documentation
- Role play on how to notify the supervisor in case of any issue with instruments

Duration: *57:00*	**Duration**: *65:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain how to perform the analytical measurement • Discuss the data analysis techniques and hazards and safety aspects involved with analytical testing • State the significance of making use of suitable test equipment to hold the concentration range of the analyte • Explain the methods of compiling and interpreting the results of tests and analyses • Explain the methods of safe storage of samples, analytical instruments etc. • Describe the methods to maintain, clean, or sterilize testing instruments or equipment • Discuss different types of records to be maintained for operation data and applicable format used for the same	• Show how to perform chemical testing using analytical instrumentation including HPLC, LC-MS, ICP-OES, Karl-Fischer auto titrator, Abel's flashpoint apparatus, etc. • Demonstrate how to weigh, mix and measure chemical ingredients before adding into machine • Show how to operate and maintain sophisticated computer-controlled analytical instrumentation for chemical analysis • Apply proper process to conduct experiments under defined conditions to verify/reject various types of hypotheses using refined scientific methods • Show how to troubleshoot instrument and scientific methodology problems to ensure efficient operation of the instruments and instrumentation and administer simple repairs as needed • Employ proper methods to monitor and analyze data from analytical tests • Apply appropriate methods to record operation data, including test results, processing times, pressures and temperatures for all pieces of

	equipment, and log that data into the digital filing system • Apply standard procedure to maintain the accurate lab notebooks and complete all related analytical reports, write summaries, and keep proper documentation • Role play on how to notify the supervisor in case of any issue with instruments
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 analytical instrumentation, chemical ingredients, Sample lab notebooks and related analytical reports, summaries etc., Sample different types of records required for maintaining data	

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**
• 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	• 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: 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**
• 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	• 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**
• 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 to the appropriate authority	• 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

• 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**
• 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	• 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**
• 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 well as isolating the hazardous substances in separate storage areas • Outline the importance of following the guidelines to collect, segregate and dispose chemicals waste into	• 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

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: 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**
• 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	• 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 arerequired 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 adaptivethinking, 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 andover 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 SkillsDuration: 5 Hours

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 andsecurely
23. Discuss the significance of displaying responsible online behavior while browsing, using various socialmedia 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 financialand 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**
		Years	***Specialization***	***Years***	***Specialization***	
Graduate/CITS	Any discipline			2	Teaching experience	Prospective ES trainer should: • have good communication skills • be well versed in English • have digital skills • have attention to detail • be adaptable have willingness tolearn
Current ITI trainers	Employability SkillsTraining (3 days full-time course done between 2019-2022)					
Certified currentEEE 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 aminimum 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: • have good communication skills • be well versed in English • have basic digital skills • 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
Certified Master Trainer	Qualification Pack: Master Trainer (MEP/Q2602			3	EEE training of Management SSC (MEPSC) (155 hours)	

Master Trainer Certification	
Domain Certification	**Platform Certification**
Certified in 60-hour Employability NOS (2022), with a minimum score of **90%.** **OR** Certified in 120-, 90-hour Employability NOS (2022), with a minimum score of **90%**	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
Note: Above Tools &Equipment not required, if Computer LAB is available in the institute.		

Module 11: On-the-Job Training

Mapped to Analytical Instruments Operator (Chemical & Petrochemical)

Mandatory Duration: *60:00*	**Recommended Duration:** *00:00*
Location: On Site	

Terminal Outcomes

- Perform steps to obtain the work schedule and other relevant details from the supervisor
- Show how to select appropriate test method such as qualitative or quantitative
- Demonstrate how to inspect analytical testing equipment for proper functioning to achieve desired accuracy and precision
- Perform steps to obtain lab glassware, lab test equipment, lab chemicals required for test
- Apply proper methods to calibrate the test equipment as per the standards
- Draft a sample for testing as per the instructions
- Employ appropriate methods to set the test parameters required for carrying the analytical test
- Show how to perform chemical testing using analytical instrumentation including HPLC, LC-MS, ICP-OES, Karl-Fischer auto titrator, Abel's flashpoint apparatus, etc.
- Demonstrate how to weigh, mix and measure chemical ingredients before adding into machine
- Show how to operate and maintain sophisticated computer-controlled analytical instrumentation for chemical analysis
- Apply proper process to conduct experiments under defined conditions to verify/reject various types of hypotheses using refined scientific methods
- Show how to troubleshoot instrument and scientific methodology problems to ensure efficient operation of the instruments and instrumentation and administer simple repairs as needed
- Employ proper methods to monitor and analyze data from analytical tests
- Apply appropriate methods to record operation data, including test results, processing times, pressures and temperatures for all pieces of equipment, and log that data into the digital filing system
- Apply standard procedure to maintain the accurate lab notebooks and complete all related analytical reports, write summaries, and keep proper documentation
- Role play on how to notify the supervisor in case of any issue with instruments
- 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**
		Years	***Specialization***	***Years***	***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 "Analytical Instruments Operator (Chemical & Petrochemical)" mapped to Qualification Pack: "RSC/Q7201, v1.0"with minimum accepted score of 80%.	Recommended that the Trainer is certified for the JobRole "Trainer (VET and Skills)", mapped to the Qualification Pack: " MEP/Q2701, v3.0" with minimum score of 80%.

Assessor Requirements

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**
Certified for a Job Role "Analytical Instruments Operator (Chemical & Petrochemical)" mapped to Qualification Pack: "RSC/Q7201, v1.0"with minimum accepted score of 80%.	Recommended that the Trainer is certified for the JobRole "Trainer (VET and Skills)", mapped to the Qualification Pack: " MEP/Q2701, v3.0" 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