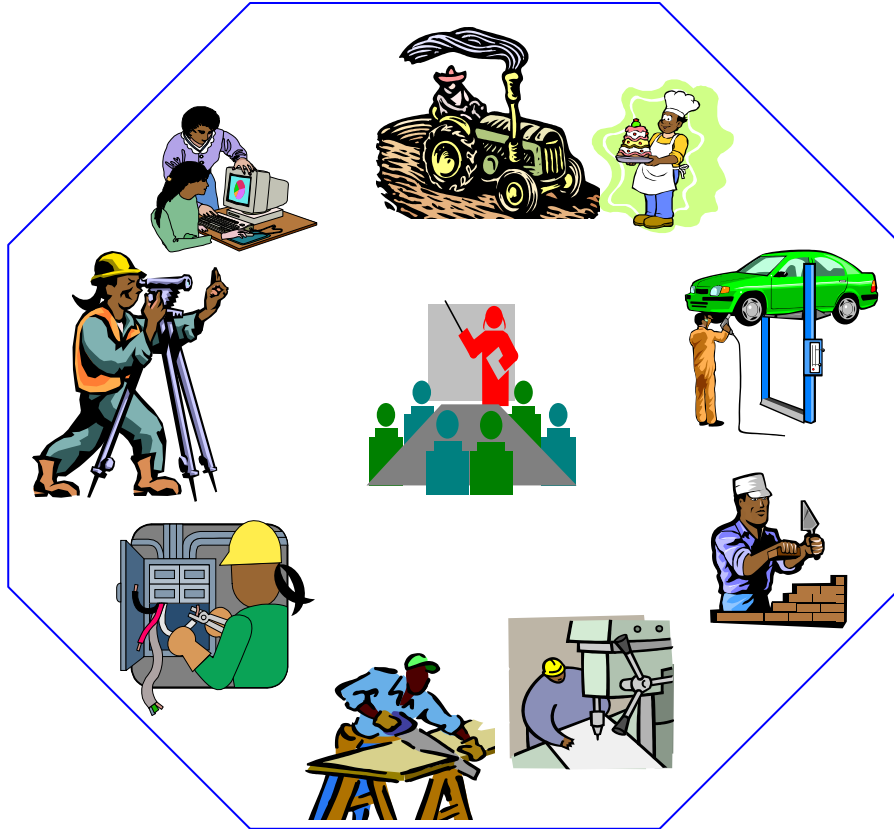MINISTRY OF LABOR
AND SKILLS

HARDWARE AND NETWORKING SERVICE LEVEL- V

TVET CURRICULUM

Based on December, 2021 Version-IV

Occupational standard (OS)

March, 2022

Adiss Ababa

Preface

The reformed TVET-System is an outcome-based system. It utilizes the needs of the labor market and occupational requirements from the world of work as the benchmark and standard for TVET delivery. The requirements from the world of work are analyzed and documented – taking into account international benchmarking – as occupational standards (OS).

In the reformed TVET-System, curricula and curriculum development play an important role with regard to quality driven TVET-Delivery. Curricula help to facilitate the learning process in a way, that trainees acquire the set of occupational competences (skills, knowledge and attitude) required at the working place and defined in the occupational standards (OS).

The curriculum development process has been actively supported and facilitated by **Ministry of Labor and Skills.**

TVET-Program Design

1.1. TVET-Program Title: Hardware and Network Servicing Level -V

1.2. TVET- Program Description

The Program is designed to develop the necessary knowledge, skills and attitude of the learners to the standard required by the occupation. The contents of this program are in line with the occupational standard. Learners who successfully completed the Program will be qualified to work as Hardware **and Network Service Technical Manager** with competencies elaborated in the respective OS. Graduates of the program will have the required qualification to work in the **Economic Infrastructure Sector** in the field of **Hardware and Network Service**.

The prime objective of this training program is to equip the learners with the identified competences specified in the OS. Graduates are therefore expected to: Identify and Resolve Network Problems, Create Technical Documentation, determine Best-Fit Topology, Monitor and Administer Stem and Network Security, Provide First Level Remote Help Desk, Configure and Administer Server, Install and manage Network protocols in accordance with the performance criteria described in the OS.

1.3. TVET-Program Learning Outcomes

The expected outputs of this program are the acquisition and implementation of the following units of competence

EIS HNS5 01 1221 Research and Review Hardware Technology Options for Organizations

EIS HNS5 02 1221 Prepare Disaster Recovery and Contingency Plan

EIS HNS5 03 1221 Assist with Policy Development for Client Support

EIS HNS5 04 1221 Establish and Maintain Client User Liaison

EIS HNS505 1221 Match IT Needs with the Strategic Direction of the Enterprise

EIS HNS5 06 1221 Install, Configure and Test Router

EIS HNS5 071221 Install and manage complex ICT networks

EIS HNS5 08 1221 Plan and Monitor the System Pilot

Duration of the TVET-Program

The Program will have duration of *280 hours* including the on school/ Institution training and on-the-job practice or cooperative training time. Such cooperative training based on realities of the industry, nature of the occupation, location of the TVET institution, and other factors will be considered in the training delivery to ensure that trainees acquire practical and workplace experience.

S.N	Unit competency	TVET Institution Training		Cooperative Training	Total hours	Remarks
		Theory	Practical			
1.	Research and Review Hardware Technology Options for Organizations	5	15	10	30	
2.	Prepare Disaster Recovery and Contingency Plan	5	15	10	30	
3.	Assist with Policy Development for Client Support	5	10	10	20	
4.	Establish and Maintain Client User Liaison	5	10	10	20	
5.	Match IT Needs with the Strategic Direction of the Enterprise	5	15	10	30	
6.	Install, Configure and Test Router	10	20	20	50	
7.	Install and manage complex ICT networks	10	30	20	60	
8.	Plan and Monitor the System Pilot	10	20	10	40	
Total calculated		**55**	**135**	**100**	**280**	
Total to be provided						

1.4. Qualification Level and Certification

Based on the descriptors elaborated on the Ethiopian National TVET Qualification Framework (NTQF) the qualification of this specific TVET Program is **"Level V".**

1.5. The learner can exit after successfully completing the Modules in one level and will be awarded the equivalent institutional certificate on the level completed. The learner can also exit after completing any one learning module. However, only certificate of attainment or attendance (this is institutional discretion) will be awarded.

1.6. Target Groups

Any citizen **with or without disability** who meets the entry requirements under items 1.7 and capable of participating in the learning activities is entitled to take part in the Program.

1.7 Entry Requirements

The prospective participants of this program are required to possess the requirements or directive of the Federal TVET Agency.

1.8 Mode of Delivery

This TVET-Program is characterized as a formal Program on middle level technical skills. The mode of delivery is co-operative training. The TVET-institution and identified companies have forged an agreement to co-operate with regard to implementation of this program. The time spent by the trainees in the industry will give them enough exposure to the actual world of work and enable them to get hands-on experience.

The co-operative approach will be supported with school-based lecture-discussion, simulation and actual practice. These modalities will be utilized before the trainees are exposed to the industry environment.

1.9. TVET – Program Structure

Unit of Competence		Module Code & Title		Learning Outcomes	Duration (In Hours)
EIS HNS5 01 1221	Research and Review Hardware Technology Options for Organizations	EIS HNS5 M01 0322	Researching and Review Hardware Technology Options for Organizations	• Research vendors, suppliers and IT industry specialists • Evaluate and report on options	30
EIS HNS5 02 1221	Prepare Disaster Recovery and Contingency Plan	EIS HNS5 M02 0322	Preparing Disaster Recovery and Contingency Plan	• Evaluate impact of system on business continuity • Evaluate threats to system • Formulate prevention and recovery strategy • Develop disaster recovery plan to support strategy	30
EIS HNS3 03 1221	Assist with Policy Development for Client Support	EIS HNS5 M03 0322	Assisting with Policy Development for Client Support	• Review change requests • Modify system according to requested changes • Train on the use of modified system	20
EIS HNS3 04 1221	Establish and Maintain Client User Liaison	EIS HNS5 M04 0322	Establish and Maintain Client User Liaison	• Determine support areas • Develop support procedures • Assign support personnel	20
	Match IT Needs with		Matching IT Needs	• Evaluate current business strategy	30

EIS HNS3 05 1221	the Strategic Direction of the Enterprise	EIS HNS5 M05 0322	with the Strategic Direction of the Enterprise	• Evaluate impact of changes • Develop action plans	
EIS HNS3 06 1221	Install, Configure and Test Router	EIS HNS5 M06 0322	Installing Configure and Test Router	• Prepare to install a router • Install and configure a router • Test the router and reconfigure the network • Complete documentation and clean-up worksite	50
EIS HNS3 07 1221	Install and manage complex ICT networks	EIS HNS5 M07 0322	Installing and managing complex ICT networks	• Plan and design a complex network to meet business requirements • Design and implement a security strategy • Install and configure a complex network to meet business requirements • Provide integrated network services across a complex network • Plan, design and implement voice and video business communications system • Manage and support a complex network	60
EIS HNS3 08 1221	Plan and Monitor the System Pilot	EIS HNS5 M08 0322	Plan and Monitor the System Pilot	• Prepare for pilot system • Install pilot system • Monitor implementation of pilot system • Evaluate pilot system	40
				Total hours	280

The time duration (Hours) indicated for the module should include all activities in and out of the TVET institution.

1.10   Institutional Assessment

Two types of evaluation will be used in determining the extent to which learning outcomes are achieved. The specific learning outcomes are stated in the modules. In assessing them, verifiable and observable indicators and standards shall be used.

The **formative assessment** is incorporated in the learning modules and form part of the learning process. Formative evaluation provides the trainee with feedback regarding success or failure in attaining learning outcomes. It identifies the specific learning errors that need to be corrected, and provides reinforcement for successful performance as well. For the teacher, formative evaluation provides information for making instruction and remedial work more effective.

Summative Evaluation the other form of evaluation is given when all the modules in the program have been accomplished. It determines the extent to which competence have been achieved. And, the result of this assessment decision shall be expressed in the term 'competent or not yet competent'.

Techniques or tools for obtaining information about trainees' achievement include oral or written test, demonstration and on-site observation.

1.11   TVET Teachers Profile

The teachers conducting this particular TVET Program are A Level and have satisfactory practical experiences or equivalent qualifications.

TVET-PROGRAMME TITLE: **Hardware and Network Servicing Level –V**

MODULE TITLE: **Researching and Reviewing Hardware Technology Options for Organizations**

MODULE CODE: **EIS HNS5 01 0322**

NOMINAL DURATION: 30 Hours

MODULE DESCRIPTION: This Module defines the competency required to apply research skills in conjunction with reviewing hardware solutions, as part of an analysis of emerging technology.

LEARNING OUTCOMES

At the end of the module the learner will be able to:

    LO1. Research vendors, suppliers and IT industry specialists.

    LO2. Evaluate and report on options

MODULE CONTENTS:

LO1. Research vendors, suppliers and IT industry specialists.

   1.1. Establishing Organizational needs and selection criteria

       1.1.1. Analyzing of emerging technology

       1.1.2. Identifying Planning phases

       1.1.3. Identifying Project Management knowledge areas

   1.2. Determining suitable suppliers and Source information.

LO2. Evaluate and report on options

   2.1   Reviewing and testing Hardware

   2.2   Reporting findings to appropriate person

   2.3   Documenting and submitting a report

LEARNING METHODS:

For None Impaired Trainees	Reasonable Adjustment for Trainees with Disability (TWD)			
	Low Vision and Blind	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video & in <u>Brail format</u>** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear sentences ❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video format ❖ Summarize main points	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the trainees	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop
Demonstration	❖ Conduct close follow up ❖ Use verbal description	❖ use Sign language interpreter ❖ Use video recorded material	❖ Illustrate in clear & short method ❖ Use Video recorded	❖ Facilitate and support the trainees having severe upper

	❖ Provide special attention in the process of guidance
	
	❖ facilitate the support of peer trainees
	
	❖ Prepare & use simulation
		❖ Ensure attention of the trainees
		
		❖ Provide structured training
		
		❖ Show clear and short method
		
		❖ Use gesture
		
		❖
		
		   rovide tutorial support
		(if necessary)
			material
			
			❖ Ensure the attention of the trainees
			
			❖
			
			   rovide tutorial support
			(if necessary)
				limbs impairment to operate equipments/ machines
				
				❖ Assign peer trainees to assist
				
				❖ Conduct close follow up
				
				❖
				
				   rovide tutorial support
				(if necessary

Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Inform the group members to speak loudly	❖ Introduce the trainees with their peers
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the	❖ Conduct close follow up and guidance ❖ Provide tutorial	❖ Assign peer trainees ❖ Use additional nominal hours if

		process/practical training	support if necessary	necessary
	❖ provide special attention in the process	❖ Introduce new and relevant vocabularies	❖ provide special attention in the process/ practical training	
Individual assignment	❖ prepare the assignment questions in large text/Brail ❖ Encourage the trainees to prepare and submit the assignment in large texts/Brail ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ se sign language interpreter ❖ rovide briefing /orientation on the assignment ❖ rovide visual recorded material	❖ rovide briefing /orientation on the assignment ❖ rovide visual recorded material	

ASSESSMENT METHODS:

Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges

Written test	❖ Prepare the exam in large texts/Brail ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration/Observation	❖ Brief the instruction or provide them in large text/Brail ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

Assessment criteria

LO1. Research vendors, suppliers and IT industry specialists.

- Organizational needs and selection criteria is established

- Suitable suppliers and vendors are determined.

- Source information from suppliers and vendors

LO2. Evaluate and report on options

- Hardware is reviewed and tested against organizational requirements.

- Findings are report to appropriate person according to their suitability for organizational requirements

- Information in a report is documented and submitted to appropriate person.

Annex: Resource Requirements

	Researching and Reviewing Hardware Technology Options for Organizations (EIS HNS5 M01 0322)			
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m^2	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit		5	1:5
4	Switch	24 port	5	1:5

TVET-PROGRAMME TITLE: **Hardware and Network Servicing Level V**

MODULE TITLE: **Preparing Disaster Recovery and Contingency Plan**

MODULE CODE: EIS HNS5 02 0322

NOMINAL DURATION: 30 Hours

MODULE DESCRIPTION: This unit defines the competency required to analyse the impact of the system on the organisation and carry out risk analysis, disaster recovery and contingency planning for the project.

LEARNING OUTCOMES

At the end of the module the learner will be able to:

LO1. Evaluate impact of system on business continuity.

LO2. Evaluate threats to system

LO3. Formulate prevention and recovery strategy

LO4. Develop disaster recovery plan to support strategy

MODULE CONTENTS:

LO1. Evaluate impact of system on business continuity.

1.1. Identifying business critical functions and the security environment
1.2. Identifying critical data and software from documentation
1.3. Assessing potential business risk and threats impacts on IT systems
1.4. Identifying and evaluating statutory, commercial requirements and contingency possibilities

LO2. Evaluate threats to system

    2.1. Identifying threats to the system

    2.2. Evaluating risk minimisation alternatives

LO3. Formulate prevention and recovery strategy

    3.1. Evaluating prevention and recovery options for critical business functions

    3.2. Identifying back-up methodologies

    3.3. Reviewing Current operational procedures of risk safeguards and contingency plan

    3.4. Submitting Disaster recovery and prevention strategy for approval

LO4. Develop disaster recovery plan to support strategy.

    4.1. Identifying and documenting resources required for disaster recovery

    4.2. Identifying and documenting processes required for disaster strategy

    4.3. Identifying cut-over criteria before initiating disaster plan

    4.4. Documenting and submitting disaster recovery plan for review and sign-off.

LEARNING METHODS:

For None Impaired Trainees	Reasonable Adjustment for Trainees with Disability (TWD)			
	Low Vision and Blind	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video & in <u>Brail format</u>** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear sentences ❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video format ❖ Summarize main points	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the trainees	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop
Demonstration	❖ Conduct close follow up ❖ Use verbal description	❖ use Sign language interpreter ❖ Use video recorded material	❖ Illustrate in clear & short method ❖ Use Video recorded	❖ Facilitate and support the trainees having severe upper

	❖ Provide special attention in the process of guidance
	
	❖ facilitate the support of peer trainees
	
	❖ Prepare & use simulation
		❖ Ensure attention of the trainees
		
		❖ Provide structured training
		
		❖ Show clear and short method
		
		❖ Use gesture
		
		❖
		
		  rovide tutorial support
		(if necessary)
			material
			
			❖ Ensure the attention of the trainees
			
			❖
			
			  rovide tutorial support
			(if necessary)
				limbs impairment to operate equipments/ machines
				
				❖ Assign peer trainees to assist
				
				❖ Conduct close follow up
				
				❖
				
				  rovide tutorial support
				(if necessary

Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Inform the group members to speak loudly	❖ Introduce the trainees with their peers
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the	❖ Conduct close follow up and guidance ❖ Provide tutorial	❖ Assign peer trainees ❖ Use additional nominal hours if

	❖ provide special attention in the process	process/practical training ❖ Introduce new and relevant vocabularies	support if necessary ❖ provide special attention in the process/ practical training	necessary
Individual assignment	❖ prepare the assignment questions in large text/Brail ❖ Encourage the trainees to prepare and submit the assignment in large texts/Brail ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ se sign language interpreter ❖ rovide briefing /orientation on the assignment ❖ rovide visual recorded material	❖ rovide briefing /orientation on the assignment ❖ rovide visual recorded material	

ASSESSMENT METHODS:

Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges

Written test	❖ Prepare the exam in large texts/Brail ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration/Observation	❖ Brief the instruction or provide them in large text/Brail ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

Assessment criteria

LO1. Evaluate impact of system on business continuity Organizational needs and selection criteria is established

- Business-critical functions and the security environment is Identify from documentation and from discussion with business area and project team

- Critical data and software is identified from documentation

- Potential impacts of business risk and threats on IT systems are assessed.

- Statutory requirements, commercial requirements and contingency possibilities are Identified and evaluated according to specifications and cost constraints

LO2. Evaluate threats to system

- Threats to the system are identified with consideration of security analysis and internal and external business environment.

- Risk minimisation alternatives are evaluated against specifications and cost constraints.

LO3. Formulate prevention and recovery strategy

- Prevention and recovery options are evaluated to support critical business functions against business specifications and cost constraints

- Current operational procedures are reviewed to ensure adequate risk safeguards and contingency plan are in place

- Disaster recovery and prevention strategy is submitted to appropriate person for approval

LO4. Develop disaster recovery plan to support strategy

- Resources required for disaster recovery are identified and documented according to specifications and cost constraints

- Processes required for disaster strategy are identified and documented according to project standards

- Cut-over criteria are identified before initiating disaster plan.

- Disaster recovery plan is documented and submit to appropriate person for review and sign-off.

Annex: Resource Requirements

	Preparing Disaster Recovery and Contingency Plan (EIS HNS5 02 0322)			
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m^2	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit	Standard	5	1:5
4	Switch	24 port	5	1:5

<table>
<tr><td colspan="4" align="center">LEARNING MODULE 03</td></tr>
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TVET-PROGRAMME TITLE: Hardware and Network Servicing Level V
MODULE TITLE: Assist with Policy Development for Client Support
MODULE CODE: EIS HNS5 M03 0322
NOMINAL DURATION: 30 Hours
MODULE DESCRIPTION: This module covers the competence required to receive, review and carry out change requests, while utilizing change management system according to client requirements.

LEARNING OUTCOMES

At the end of the module the trainee will be able to:

LO1. Review change requests

LO2. Modify system according to requested changes

LO3. Train on the use of modified system

MODULE CONTENTS:

LO1. Review change requests

1.1.Receiving and documenting *hardware* and *software* change requests

1.2.Gathering and organizing *System* data for change requests

1.3.Reviewing proposed changes against current and future business requirements

1.4. Examining System data with work team

1.5. Discussing and clarifying selected changes with *clients*

LO2. Modify system according to requested changes

2.1. Identifying potential solution to solve problems

2.2. Developing and documenting possible solutions

2.3. Ranking and presenting possible solutions to appropriate person

2.4. Planning implementation and evaluation for possible solutions

2.5. Documenting recommended solutions and submitting for confirmation

LO3. Train on the use of modified system

3.1. Preparing training on changed system

3.2. Delivering training

3.3. Evaluating the training to confirm training effectiveness

For none impaired trainees	Reasonable Adjustment for Trainees with Disability (TWD)			
	Low Vision	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear sentences ❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the trainees	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop

		format ❖ Summarize main points		
Demonstration	❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer trainees ❖ Prepare & use simulation	❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of the trainees ❖ Provide structured training ❖ Show clear and short method ❖ Use gesture ❖ rovide tutorial support (if necessary)	❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the trainees ❖ rovide tutorial support (if necessary)	❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist ❖ Conduct close follow up ❖ rovide tutorial support (if necessary
Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other	❖ Introduce the trainees with their peers

		❖ group member ❖ Inform the group members to speak loudly	
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training	❖ Assign peer trainees ❖ Use additional nominal hours if necessary
Individual assignment	❖ prepare the assignment questions in large text ❖ Encourage the trainees to prepare and submit the assignment in large texts ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	

ASSESSMENT METHODS:

Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges
Written test	❖ Prepare the exam in large texts ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader ❖ (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration /Observation	❖ Brief the instruction or provide them in large text ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

ASSESSMENT CRITERIA:

LO1. Review change requests

- Requests are received and documented for *hardware* and *software* changes, utilizing a change management system and according to organizational help desk procedures.

- *System* data are gathered and organized relevant to the change requests, using available diagnostic tools.

- The proposed changes are reviewed against current and future business *requirements.*

- System data are examined, with work team, in order to select appropriate changes to be carried out.

- Selected changes are discussed and e clarified with *client*

LO2. Modify system according to requested changes

- Potential solution is identified to solve problems.

- Recommendations about possible solutions are developed, documented, ranked and presented to the appropriate person for decision.

- Implementation and evaluation of solutions are planned.

- Recommended solutions are technically documented and submitted to appropriate person for confirmation.

LO3. Train on the use of modified system

- Training is prepared to meet the needs of client in using the changed system.

- Prepared training is delivered appropriately for client

- Evaluate the given training to confirm the expected result has been achieved

Annex: Resource Requirements

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
	Assist with Policy Development for Client Support (EIS HNS5 03 0322)			
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m^2	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit	Standard	5	1:5
4	Switch	24 port	5	1:5

LEARNING MODULE 04

TVET-PROGRAMME TITLE: Hardware and Network Servicing Level V

MODULE TITLE: Establish and Maintain Client User Liaison

MODULE CODE: EIS HNS5 M04 0322

NOMINAL DURATION: 20... Hours

MODULE DESCRIPTION: This module covers the competence required to establish and maintain client use of liaison in an IT environment, post implementation. This occurs after the business-critical functions have been determined.

LEARNING OUTCOMES

At the end of the module the trainee will be able to:

LO1. Determine support areas

LO2. Develop support procedures

LO3. Assign support personnel

MODULE CONTENTS:

LO1. Determine support areas

1.1. Identifying and recording Information technology usage

1.2. Identifying stakeholders in the system

1.3. Identifying organisational structure, culture and politics for support requirements

1.4. Determining required level of support

LO2. Develop support procedures

2.1. Contacting organisational units to verify support needs

2.2. Establishing procedures to provide required support

2.3. Documenting agreed procedure and service-level agreement

LO3. Assign Support personnel

3.1. Identifying IT skills with support activities

3.2. Verifying availability of selected personnel and assign

3.3. Providing support using agreed upon procedures.

3.4. Obtaining regular feedback from the appropriate person

Learning Methods:				
For none impaired trainees	**Reasonable Adjustment for Trainees with Disability (TWD)**			
	Low Vision	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear sentences ❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the trainees	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop

		format ❖ Summarize main points		
Demonstration	❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer trainees ❖ Prepare & use simulation	❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of the trainees ❖ Provide structured training ❖ Show clear and short method ❖ Use gesture ❖ rovide tutorial support (if necessary)	❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the trainees ❖ rovide tutorial support (if necessary)	❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist ❖ Conduct close follow up ❖ rovide tutorial support (if necessary
Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other	❖ Introduce the trainees with their peers

			❖ group member ❖ Inform the group members to speak loudly	
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training	❖ Assign peer trainees ❖ Use additional nominal hours if necessary
Individual assignment	❖ prepare the assignment questions in large text ❖ Encourage the trainees to prepare and submit the assignment in large texts ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	

ASSESSMENT METHODS:

Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges
Written test	❖ Prepare the exam in large texts ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader ❖ (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration /Observation	❖ Brief the instruction or provide them in large text ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

ASSESSMENT CRITERIA:

LO1. Determine support areas

- Information technology used in the organisational unit is identified and recorded.

- *Stakeholders* of the *system* are identified.

- Organisational structure, culture and politics are identified in relation to support requirements.

- Level of support required by each organisational unit is determined.

LO2. Develop support procedure

- Organisational units are contacted, as required, to verify support needs.

- Procedures are established for providing required support, including method of contact, frequency of meetings and reports

- Agreed procedure, *service-level agreement*, is documented

LO3. Assign support person

- IT skills required to assist each organisational unit are identified with support activities.

- Personnel are assigned according to human resource processes.

- Availability of selected personnel is verified.

- Support is provided using agreed procedures.

- Feedback is obtained from the appropriate person on a regular basis.

Annex: Resource Requirements

	Establish and Maintain Client User Liaison (EIS HNS5 04 0322)			
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m^2	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit	Standard	5	1:5
4	Switch	24 port	5	1:5

LEARNING MODULE 05

TVET-PROGRAMME TITLE: Hardware and Network Servicing Level V	

MODULE TITLE: Matching IT Needs with the Strategic Direction of the Enterprise

MODULE CODE: EIS HNS5 05 1221

NOMINAL DURATION: 30 Hours

MODULE DESCRIPTION: This module defines the competency required to ensure IT services meet current and future internal operational enterprise requirements

LEARNING OUTCOMES

At the end of the module the trainee will be able to:

LO1. Evaluate current business strategy

LO2. Evaluate impact of changes

LO3. Develop action plans

MODULE CONTENTS:

LO1. Evaluate current business strategy

    1.1 Analyzing current strategic plan of the organization

    1.2 Comparing current operational practices and strategic plan to identify areas of IT improvement.

    1.3 Reporting the impact of IT developments.

LO2. Evaluate impact of changes

    2.1 Reviewing current IT systems.

    2.2 Comparing and contrasting current and proposed IT systems and document it.

    2.3 Determining the objectives and implications of introducing IT system change.

    2.4 Documenting and forwarding findings for feedback.

LO3. Develop action plans

    3.1 Developing action plans for the proposed changes

    3.2 Ensuring action plans takes account of important considerations.

    3.3 Documenting action plans

    3.4 Forwarding documentation for feedback/approval.

Learning Methods:				
For none impaired trainees	**Reasonable Adjustment for Trainees with Disability (TWD)**			
	Low Vision	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear sentences ❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video format	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the trainees	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop

		❖ Summarize main points		
Demonstration	❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer trainees ❖ Prepare & use simulation	❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of the trainees ❖ Provide structured training ❖ Show clear and short method ❖ Use gesture ❖ rovide tutorial support (if necessary)	❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the trainees ❖ rovide tutorial support (if necessary)	❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist ❖ Conduct close follow up ❖ rovide tutorial support (if necessary
Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Introduce the trainees with their peers

			❖ Inform the group members to speak loudly	
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training	❖ Assign peer trainees ❖ Use additional nominal hours if necessary
Individual assignment	❖ prepare the assignment questions in large text ❖ Encourage the trainees to prepare and submit the assignment in large texts ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	

ASSESSMENT METHODS:

Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges
Written test	❖ Prepare the exam in large texts ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader ❖ (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration /Observation	❖ Brief the instruction or provide them in large text ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

Assessment Criteria

LO1. Evaluate current business strategy

- Current strategic plan of organization is analyzed to understand the industry environment and current organizational goals.
- Information related to current operational practices and the strategic plan is compared to determine possible IT gaps and improvement opportunities.
- Information regarding the impact of IT developments is reported to appropriate person(s)

LO2. Evaluate impact of changes

- Information on current IT systems supported by the organization is reviewed.
- Advantages and disadvantages of current and proposed IT systems are compared and documented.
- The objectives and implications of introducing changes are determined.
- Findings are document and forward to appropriate person(s) for feedback.

LO3. 3. Develop action plans

- Action plans are developed for the proposed changes that can be implemented according to organizational policies and procedures
- Action plans that take account of appropriate operational, financial, legal, human relations, internal and external operating environments and other relevant considerations are ensured.
- Document action plans, ensuring that standards, targets and
- implementation methods are detailed
- Documentation is forwarded to appropriate person for feedback/approval.

Annex: Resource Requirements

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
Matching IT Needs with the Strategic Direction of the Enterprise (EIS HNS5 05 0322)
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m^2	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit	Standard	5	1:5
4	Switch	24 port	5	1:5

LEARNING MODULE 06

TVET-PROGRAMME TITLE: Hardware and Network Servicing Level V
MODULE TITLE: Installing, configuring and testing a router
MODULE CODE: EIS HNS5 06 1221
NOMINAL DURATION: 50 Hours
MODULE DESCRIPTION: This module describes the performance outcomes, skills and knowledge required to undertake router installation and configuration as part of the upgrade in an existing network or the implementation of a new network.
LEARNING OUTCOMES At the end of the module the trainee will be able to: **LO1.** Prepare to install a router **LO2.** Install and configure a router **LO3**. Test the router and reconfigure the network **LO4**. Complete documentation and clean-up worksite

MODULE CONTENTS:
 	
LO1. Prepare to install a router
 	
    1.1 Preparing for given work
 	
    1.2 Arranging access to the network site
 	
    1.3 Ascertaining network topology
 	
    1.4 Determining the internet protocol (IP) addressing scheme.
 	
    1.5 Evaluating network management and security requirements
 	
    1.6 Selecting an appropriate router with needed features
 	
    1.7 Choosing cables, wireless application protocol (WAP), WAN connectors and other peripherals/tools
 	
LO2. Installing and configuring a router
 	
    2.1 Assembling router and peripherals
 	
    2.2 Connecting cables and WAN connectors to the router and to the network
 	
    2.3 Practicing Simulation software
 	
    2.4 Configuring router
 	
LO3. **Test the router and reconfigure the network**
 	
    3.1 Testing the router for connectivity and routing protocol functions

3.2 Adapting or modifying the router configuration

3.3 Reviewing router in line with organizational requirements

3.4 Making adjustments to network depending on test results

LO4. **Complete documentation and clean-up worksite**

4.1 Tabulating test results and complete all user reports

4.2 Completing report and notifying the status of network

4.3 Cleaning up and reestablish worksite

4.4 Securing sign off or getting approval from appropriate person

Learning Methods:				
For none impaired trainees	**Reasonable Adjustment for Trainees with Disability (TWD)**			
	Low Vision	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear sen3tences ❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video format	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the trainees	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop

		❖ Summarize main points		
Demonstratio n	❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer trainees ❖ Prepare & use simulation	❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of the trainees ❖ Provide structured training ❖ Show clear and short method ❖ Use gesture ❖ rovide tutorial support (if necessary)	❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the trainees ❖ rovide tutorial support (if necessary)	❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist ❖ Conduct close follow up ❖ rovide tutorial support (if necessary
Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the work	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member	❖ Introduce the trainees with their peers

			❖ Inform the group members to speak loudly	
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training	❖ Assign peer trainees ❖ Use additional nominal hours if necessary
Individual assignment	❖ prepare the assignment questions in large text ❖ Encourage the trainees to prepare and submit the assignment in large texts ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	

ASSESSMENT METHODS:

Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter ❖ Use short and clear questioning ❖ Time extension	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges
Written test	❖ Prepare the exam in large texts ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader ❖ (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration /Observation	❖ Brief the instruction or provide them in large text ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

ASSESSMENT CRITERIA:

LO1. Prepare to install a router

- Prepare for given work according to relevant legislation, occupational health and safety (OHS), codes, regulations and standards
- Arrange access to the site according to required procedure
- Ascertain network topology from technical requirements
- Determine the internet protocol (IP) addressing scheme for the network topology
- Evaluate network management and security requirements, with reference to current and future requirements
- Select a router with appropriate features according to technical requirements
- Choose cables, wireless application protocol (WAP), wide area network (WAN) connectors and other peripherals/tools according to network and router specification, and WAN protocols

LO2. Install and configure a router

- Assemble router and peripherals according to manufacturer's requirements, enterprise guidelines and protocols
- Connect communications cables and WAN connectors to the router and to the network
- Configure router according to manufacturer's instructions and technical requirements, taking into account interoperability requirements with network components
- use and work on Simulation software at the absence of real router

LO3. Test the router and reconfigure the network

- Test the router for connectivity across the network and for routing protocol functions
- Adapt or modify the predetermined router configuration, depending on outcome of tests
- Review router in line with organizational requirements

- Test router and peripherals according to manufacturer's instructions and technical requirements
- Test hardware and router to ensure full functionality and interoperability
- Reconfigure additional hardware as required
- Make adjustments to network depending on test results

LO4. Complete documentation and clean-up worksite

- Tabulate test results and complete all user reports
- Complete report and notify client of status of the network
- Clean up and restore worksite to client's satisfaction
- Secure sign off from appropriate person

Annex: Resource Requirements

Installing, configuring and testing a router (EIS HNS5 06 0322)				
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m²	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit	Standard	5	1:5
4	Switch	24 port	5	1:5

LEARNING MODULE 07

TVET-PROGRAMME TITLE: HAERDWARE AND NETWOK SERVICE LEVEL V
MODULE TITLE:- Installing and manage complex ICT networks
MODULE CODE: EIS HNS1 M07 0322
NOMINAL DURATION: 60 Hours
MODULE DESCRIPTION: This module describes the performance outcomes, skills and knowledge required to install and manage enterprise-wide information and communications technology (ICT) networks.
LEARNING OUTCOMES   At the end of the module the learner will be able to: **LO1.** Plan and design a complex network to meet business requirements   **LO2**. Design and implement a security strategy   **LO3**. Install and configure a complex network to meet business requirements   **LO4**. Provide integrated network services across a complex network   **LO5**. Plan, design and implement voice and video business communications system   **LO6**. Manage and support a complex network   **LO7**. Test network functionality and obtain sign-off

MODULE CONTENTS:

LO1. Plan and design a complex network to meet business requirements

1.1 Reviewing network design, business requirements and technical specifications for network components

1.2 Researching available options for required network functionality

1.3 Planning network implementation to provide network services and resources

LO2. Design and implement a security strategy

2.1 Analysing requirements for internal and external security

2.2 Designing security strategy

2.3 Implementing security strategy

2.4 Monitoring viability and reliability of network security

2.5 Monitoring continually network access for security breaches

LO3. Install, configure and optimize operating system

3.1 Checking and installing cabling and associated components

3.2 Installing and configuring servers, routers, switches or other devices to provide

      3.2.1. Internet protocol (IP) addressing and routing

      3.2.2. Name resolution

      3.2.3. Network services

      3.2.4. Data management services

3.3 Installing and configuring remote access services

LO4. Provide integrated network services across a complex network

4.1 .Integrating multiple network services across network

4.2 .Analysing and resolving interoperability issues

4.3 .Optimising performance

4.4 .Rectifying security conflicts arising from integrating services

LO5. Plan, design and implement voice and video business communications system

5.1 .Installing and configuring software and test VoIP and video conferencing services

5.2 .Incorporating communications server to provide real-time multimedia communications

5.3 .Selecting common voice and videoconferencing codes

LO6. Manage and support a complex network

6.1 .Identifying and evaluating network management tools

6.2 .Selecting and installing network management tools

6.3 .Setting and monitor alerts and logs

6.4 .Capturing and analysing network performance data

6.5 .Implementing automated server updates, desktop management policies and virus checking

6.6 .Using remote management tools

LO7. Test network functionality and obtain sign-off

7.1 .Testing and recording network functionality results

7.2 .Recording results of network functionality test

7.3 .Completing network documentation to organisational standards

Learning Methods:				
For none impaired trainees	**Reasonable Adjustment for Trainees with Disability (TWD)**			
	Low Vision	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop

		sen3tences	trainees	
	lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video format ❖ Summarize main points		
Demonstration	❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer	❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of	❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the	❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist

	trainees	the trainees	trainees	❖ Conduct close follow up
	❖ Prepare & use simulation	❖ Provide structured training	❖ Provide tutorial support	❖ Provide tutorial support
		❖ Show clear and short method	(if necessary)	(if necessary
		❖ Use gesture		
		❖ Provide tutorial support		
		(if necessary)		
Group discussion	❖ Facilitate the integration of trainees with group members	❖ Use sign language interpreters	❖ Facilitate the integration of trainees with group members	❖ Introduce the trainees with their peers
	❖ Conduct close follow up	❖ Facilitate the integration of trainees with group members	❖ Conduct close follow up	
	❖ Introduce the trainees with other group member		❖ Introduce the	
	❖ Brief the thematic issues of the	❖ Conduct close follow		

		up	trainees with other group member	
		❖ Introduce the trainees with other group member	❖ Inform the group members to speak loudly	
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training	❖ Assign peer trainees ❖ Use additional nominal hours if necessary

Individual assignment	❖ prepare the assignment questions in large text ❖ Encourage the trainees to prepare and submit the assignment in large texts ❖ Make available recorded assignment questions ❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy	❖ Use sign language interpreter ❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	❖ Provide briefing /orientation on the assignment ❖ Provide visual recorded material	

ASSESSMENT METHODS:				
Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign language interpreter	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges

	Use short and clear questioning ❖ Time extension			
Written test	❖ Prepare the exam in large texts ❖ Use interview as an option if necessary ❖ Prepare the exam in audio format ❖ Assign human reader ❖ (if necessary) ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, True or False, matching and short answers ❖ Avoid essay writing ❖ Time extension	❖ Prepare the exam using short sentences, multiple choices, true or false, matching and short answers if necessary.	❖ Use oral response as an option to give answer for trainees having severe upper limb impairment ❖ Time extension for trainees having severe upper limb impairment
Demonstration/Observation	❖ Brief the instruction or provide them in large text ❖ Time extension	❖ Use sign language interpreter ❖ Brief on the instruction of the exam ❖ Provide activity-based/ practical assessment method ❖ Time extension	❖ Provide activity based assessment ❖ Brief on the instruction of the exam ❖ Use loud voice ❖ Time extension	❖ Provide activity based assessment ❖ Conduct close follow up ❖ Time extension

Assessment Criteria

LO1. Plan and design a complex network to meet business requirements

- Review network design, business requirements and latest vendor technical specifications for *network components*
- Research options available for providing the network functionality required
- Plan network implementation to provide *network services* and *resources* to meet business requirements

LO2. Design and implement a security strategy

- Analyse requirements for internal and external security
- Design *security strategy* to meet requirements
- Implement security strategy
- Undertake on-going monitoring of the viability and reliability of network security, through testing and use of technical *tools*
- Continually monitor internal and external network access for security breaches

LO3. Install, configure and optimize operating system

- Check and install cabling and associated components according to industry standards
- Install and configure servers, routers, switches or other devices to provide internet protocol (IP) addressing and routing
- Install and configure servers, routers, switches or other devices to provide name resolution
- Install and configure servers, routers, switches or other devices to provide network services
- Install and configure remote access services
- Install and configure devices to provide *data management services*

LO4. Provide integrated network services across a complex network

- *Integrate multiple network services* across network
- Analyse and resolve interoperability issues
- Optimise performance
- Rectify security conflicts arising from integrating services

LO5. Plan, design and implement voice and video business communications system

- Install software and configure and test voice over internet protocol (VoIP) and videoconferencing services
- Incorporate the use of a communications server to provide real-time multimedia communications
- Select common voice and videoconferencing codes according to standards and practices

LO6. Manage and support a complex network

- Identify and evaluate appropriate network management tools to assist in the administration of the complex network
- Select and install network management tools according to industry and organisational standards
- Set and monitor alerts and logs
- Capture and analyse network performance data
- Implement automated server updates
- Implement desktop management policies
- Implement automated virus checking
- Use remote management tools

LO7. Test network functionality and obtain sign-off

- Test network functionality and record results
- Record results of network functionality test
- Complete network documentation according to organizational standards

Annex: Resource Requirements

	Installing and manage complex ICT networks (EIS HNS5 07 0322)			
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m²	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit	Standard	5	1:5
4	Switch	24 port	5	1:5

TVET-PROGRAMME TITLE: HAERDWARE AND NETWOK SERVICE LEVEL V

MODULE TITLE:- Planning and Monitoring the System Pilot

MODULE CODE: EIS HNS1 M08 0322

NOMINAL DURATION: 40 Hours

MODULE DESCRIPTION: This Module defines the competency required to test and evaluate the developed system among a subset of clients to gauge reaction and gather feedback.

LEARNING OUTCOMES

At the end of the module the learner will be able to:

LO1. Prepare for pilot system

LO2. Install pilot system

LO3. Monitor implementation of pilot system

LO4. Evaluate pilot system

MODULE CONTENTS:

LO1. Prepare for pilot system

1.1 Establishing and confirming objectives, success and acceptance criteria

1.2 Identifying and securing technical and organizational resources

1.3 Establishing and confirming pilot executive support

1.4 Completing pilot project plan and referring project documentation for approval

LO2. Install pilot system

2.1 .Installing and configuring pilot project plan

2.2 .Verifying and recording technical readiness of pilot

2.3 Taking necessary actions to ascertain data

2.4 .Preparing and submitting status reports for sign-off.

LO3. Monitor implementation of pilot system

3.1 .Reviewing pilot and support documentation

3.2 Identifying Pilot and system procedures

3.3 .Supervising system functionality and integrity tests

3.4 .Document Findings

3.5 .Providing appropriate technical supports

LO4. Evaluate pilot system

4.1 Reviewing pilot objectives and success criteria against pilot operation

4.2 Reviewing client and executive feedback on acceptance criteria

4.3 Identifying and prioritizing success areas and improvement

4.4 Assessing the impact of changes on the pilot

4.5 Submitting document review process to appropriate person

Learning Methods:				
For none impaired trainees	**Reasonable Adjustment for Trainees with Disability (TWD)**			
	Low Vision	**Deaf**	**Hard of hearing**	**Physical impairment**
Lecture-discussion	❖ Provide large print text ❖ Prepare the lecture in **Audio/video** ❖ Organize the class room seating arrangement to be accessible to trainees ❖ Write short notes on the black/white board using large text ❖ Make sure the luminosity of the light of class room is kept ❖ Use normal tone of voice ❖ Encourage trainees to record the	❖ Assign sign language interpreter ❖ Arrange the class room seating to be conducive for eye to eye contact ❖ Make sure the luminosity of the light of class room is kept ❖ Introduce new and relevant vocabularies ❖ Use short and clear	❖ Organize the class room seating arrangement to be accessible to trainees ❖ Speak loudly ❖ Ensure the attention of the trainees ❖ Present the lecture in video format ❖ Ensure the attention of the	❖ Organize the class room seating arrangement to be accessible for wheelchairs users. ❖ Facilitate and support the trainees who have severe impairments on their upper limbs to take note ❖ Provide Orientation on the physical feature of the work shop

		sen3tences	trainees	
	lecture in audio format ❖ Provide Orientation on the physical feature of the work shop ❖ Summarize main points	❖ Give emphasis on visual lecture and ensure the attention of the trainees ❖ Avoid movement during lecture time ❖ Present the lecture in video format ❖ Summarize main points		
Demonstration	❖ Conduct close follow up ❖ Use verbal description ❖ Provide special attention in the process of guidance ❖ facilitate the support of peer	❖ use Sign language interpreter ❖ Use video recorded material ❖ Ensure attention of	❖ Illustrate in clear & short method ❖ Use Video recorded material ❖ Ensure the attention of the	❖ Facilitate and support the trainees having severe upper limbs impairment to operate equipments/ machines ❖ Assign peer trainees to assist

	trainees ❖ Prepare & use simulation	the trainees ❖ Provide structured training ❖ Show clear and short method ❖ Use gesture ❖ Provide tutorial support (if necessary)	trainees ❖ Provide tutorial support (if necessary)	❖ Conduct close follow up ❖ Provide tutorial support (if necessary
Group discussion	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the trainees with other group member ❖ Brief the thematic issues of the	❖ Use sign language interpreters ❖ Facilitate the integration of trainees with group members ❖ Conduct close follow	❖ Facilitate the integration of trainees with group members ❖ Conduct close follow up ❖ Introduce the	❖ Introduce the trainees with their peers

	work	up ❖ Introduce the trainees with other group member	trainees with other group member ❖ Inform the group members to speak loudly	
Exercise	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/practical training ❖ Introduce new and relevant vocabularies	❖ Conduct close follow up and guidance ❖ Provide tutorial support if necessary ❖ provide special attention in the process/ practical training	❖ Assign peer trainees ❖ Use additional nominal hours if necessary

| Individual assignment | ❖ prepare the assignment questions in large text

❖ Encourage the trainees to prepare and submit the assignment in large texts

❖ Make available recorded assignment questions

❖ Facilitate the trainees to prepare and submit the assignment in soft or hard copy | ❖ Use sign language interpreter

❖ Provide briefing /orientation on the assignment

❖ Provide visual recorded material | ❖ Provide briefing /orientation on the assignment

❖ Provide visual recorded material | |

ASSESSMENT METHODS:				
Interview		❖ Use sign language interpreter ❖ Ensure or conform whether the proper communication was conducted with the trainee through the service of the sign	❖ Speak loudly ❖ Using sign language interpreter if necessary	❖ Use written response as an option for the trainees having speech challenges

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Assessment Criteria

LO1. Prepare for pilot system

- Objectives, success criteria and *acceptance criteria* are established and confirmed for pilot implementation

- Technical and *organizational resources* required for *pilot* implementation are identified and secured.

- Executive support for pilot is established and confirmed.

- Project plan for pilot is completed and project documentation is referred to appropriate person for approval

LO2. Install pilot system

- Pilot is installed and configured according to *project plan*

- Technical readiness of pilot is verified and recorded.

- A necessary action is taken to ascertain accuracy of data.

- A status report is prepared and submitted to appropriate person for sign-off.

LO3. Monitor implementation of pilot system

- Pilot and support documentation is reviewed, to ensure complete understanding.
- Pilot and system procedures is Identified.
- System functionality and integrity tests is supervised
- Document findings
- Appropriate technical support is provided as required.

LO4. Evaluate pilot system

- Pilot objectives and success criteria is reviewed against pilot operation

- Client and executive feedback on pilot is reviewed against *acceptance criteria*

- Areas of success and improvement are Identified and prioritized

- Assess the impact of changes on the pilot

- Document review process and submit to appropriate person

Annex: Resource Requirements

	Planning and Monitoring the System Pilot (EIS HNS5 08 0322)			
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	TTTLM prepared by the trainer	25	1:1
2.	*Reference Books*			
2.1	Internet Infrastructure: Networking, Web Services, and Cloud Computing 1st edition	**Authors:** Richard Fox, & Wei Hao	5	1:5
B.	*Learning Facilities & Infrastructure*			
1.	Computer Lab	Area: 35m^2	1	1:25
2.	Internet connection	Broadband	1	1:25
3.	LAN	Star topology	1	1:25
C.	*Consumable Materials*			
1.	Paper	Type: A4 Desta	1	1:25
2	Printer cartridge	For laser printer	1	1:25
D.	*Tools and Equipment's*			
1.	Projector	LCD	1	1:25
2	Computer	Desktop	25	1:1
3	Network Toolkit	Standard	5	1:5
4	Switch	24 port	5	1:5

Acknowledgement

The **Ministry of Labor and Skills** wishes to thank and appreciation for the trainers who donated their effort and time to develop this outcome based curriculum for the TVET program Hardware and Networking Service Level V. We also thank all regional TVET Colleges for active facilitation of their trainers for the development of this curriculum.

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