



REPUBLIC OF KENYA

COMPETENCY-BASED MODULAR CURRICULUM

FOR

INFORMATION AND COMMUNICATION TECHNOLOGY

KNQF LEVEL 4

CYCLE 3

PROGRAMME ISCED CODE: 061 2354A



TVET CDACC
P.O. BOX 15745-00100
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FOREWORD

The provision of quality education and training is fundamental to the Government's overall strategy for social and economic development. Quality education and training contribute to the achievement of Kenya's development blueprint and sustainable development goals.

Reforms in the education sector are necessary to achieve Kenya Vision 2030 and meet the provisions of the Constitution of Kenya 2010. The education sector had to be aligned to the Constitution, and this resulted in the formulation of the Policy Framework for Reforming Education and Training in Kenya (Sessional Paper No. 14 of 2012). A key feature of this policy is the radical change in the design and delivery of TVET training. This policy document requires that training in TVET be competency-based, curriculum development be industry-led, certification be based on demonstration of competence, and the mode of delivery allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that this curriculum has been developed. For trainees to build their skills on foundational hands-on activities of the occupation, units of learning are grouped in modules. This has eliminated duplication of content and streamlined exemptions based on skills acquired as a trainee progresses in the up-skilling process, while at the same time allowing trainees to be employable in the shortest time possible through the acquisition of part qualifications.

It is my conviction that this curriculum will play a great role in developing competent human resources for the ICT Sector's growth and development.

PRINCIPAL SECRETARY

STATE DEPARTMENT FOR TVET

MINISTRY OF EDUCATION

PREFACE

Kenya Vision 2030 aims to transform Kenya into a newly industrializing middle-income country, providing high-quality life to all its citizens by the year 2030. Kenya intends to create globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through lifelong education and training. TVET has a responsibility to facilitate the process of inculcating knowledge, skills, and worker behaviour necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency-Based Education and Training (CBET).

TVET Act, CAP 210A and Sessional Paper No. 1 of 2019 on Reforming Education and Training in Kenya for Sustainable Development emphasized the need to reform curriculum development, assessment, and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by industry, as well as increase the global competitiveness of the Kenyan labour force.

This curriculum has been developed in adherence to the Kenya National Qualifications Framework and CBETA standards and guidelines. The curriculum is designed and organized into Units of Learning with Learning Outcomes, suggested delivery methods, learning resources, and methods of assessing the trainee's achievement. In addition, the units of learning have been grouped in modules to concretize the skills acquisition process and streamline upskilling.

I am grateful to all expert trainers and everyone who played a role in translating the Occupational Standards into this competency-based modular curriculum.

CHAIRPERSON, TVET CDACC

ACKNOWLEDGMENT

This curriculum has been designed for competency-based training and has independent units of learning that allow the trainee flexibility in entry and exit. In developing the curriculum, significant involvement and support were received from expert trainers, institutions and organizations.

I recognize with appreciation the role of the ICT National Sector Skills Committee (NSSC) in ensuring that competencies required by the industry are addressed in the curriculum. I also thank all stakeholders in the ICT sector for their valuable input and everyone who participated in developing this curriculum.

I am convinced that this curriculum will go a long way in ensuring that individuals aspiring to work in the ICT Sector acquire competencies to perform their work more efficiently and effectively.

COUNCIL SECRETARY/CEO

TVET CDACC

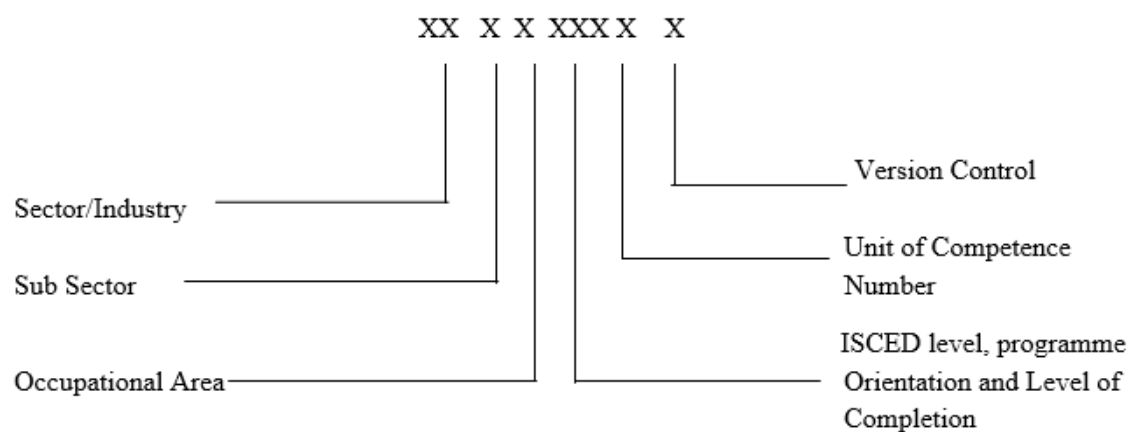
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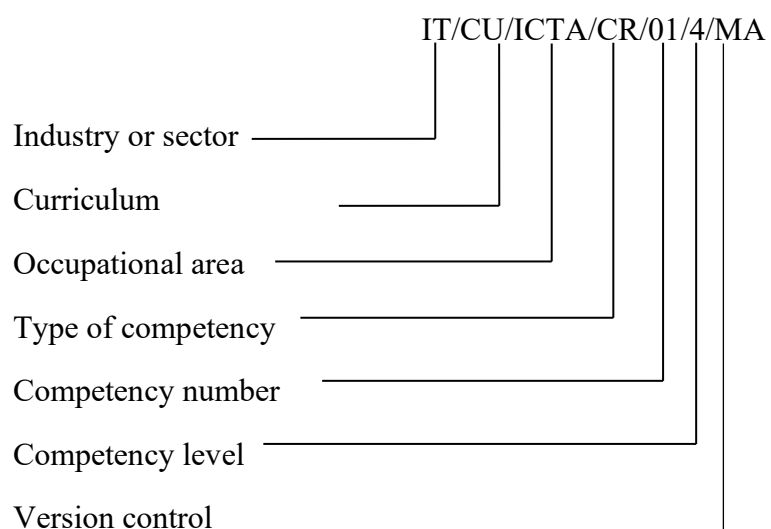
ACRONYMS

HTTP	Hypertext Transfer Protocol
ICT	Information Communication Technology
IT	Information Technology
TCP/IP	Transmission Control Protocol/Internet Protocol
TVET	Technical Vocational Education and Training
IEEE	Institute of Electrical and Electronics Engineers
KNQF	Kenya National Qualification Framework
ISCED	International Standard Classification of Education
KNQA	Kenya National Qualification Authority
KCSE	Kenya Certificate of Secondary Education

KEY TO ISCED UNIT CODE



KEY TO TVET CDACC UNIT CODE



COURSE OVERVIEW

The ICT Operation Level 4 curriculum consists of competencies that an individual must have to support or enable the use of ICT equipment and applications.

It involves, performing computer essentials, performing computer operations, computer network setup and performing computer repair and maintenance.

Summary of Units of Learning

ISCED Unit Code	TVET CADD Unit Code	Units Title	Unit Duration (Hours)	Credit Factor
MODULE I				
0611 351 01A	IT/CU/ICTA/CR/01/4/MA	Computer Essentials	120	12
0611 351 02A	IT/CU/ICTA/CR/02/4/MA	Computer Operations	150	15
MODULE II				
0612 351 03A	IT/CU/ICTA/CR/03/4/MA	Computer Network Setup	200	20
0714 351 04A	IT/CU/ICTA/CR/04/4/MA	Computer Repair and Maintenance	200	20
Sub Total			670	67
Industry Training			320	32
GRAND TOTAL			990	99

Entry Requirements

An individual entering this course should have any of the following minimum requirements:

- a) Kenya Certificate of Secondary Education (KCSE) mean grade E,

Or

- b) Equivalent qualification as determined by TVETA

Trainer Qualification

A trainer for any of the Units of Competency in this course must:

- a) Have at least a minimum of ICT KNQF Level 5 qualification or its equivalent in a trade area related to this course.
- b) Be registered by TVETA.

Industry Training

An individual enrolled in this course will be required to undergo Industry training for a minimum period of 320 hours in ICT sector. The industrial training may be taken after completion of all units for those pursuing the full qualification or be distributed equally in each unit for that pursuing part qualification. In the case of dual training model, industrial training shall be as guided by the dual training policy.

Assessment

The course shall be assessed formatively and summative:

- a) During formative assessment all performance criteria shall be assessed based on performance criteria weighting.
- b) Summative assessment shall focus on critical aspects of the Unit of competency.
- c) Theory and practical weight shall be 10:90 for each unit of learning.
- d) Formative and summative assessment weights shall constitute 60% and 40% of the overall score respectively.
- e) For a candidate to be declared competent in a unit of competency, the candidate must meet the following conditions:
 - i) Obtained at least 40% in theory assessment in formative and summative assessments.
 - ii) Obtained at least 50% in practical assessment in formative and summative assessment where applicable.
 - iii) Obtained at least 50% in the weighted results between formative assessment and summative assessment where the former constitutes 60% and the latter 40% of the overall score.
- f) Assessment performance rating for each unit of competency shall be as follows:

MARKS	COMPETENCE RATING
80 -100	Attained Mastery

65 - 79	Proficient
50 - 64	Competent
49 and below	Not Yet Competent
Y	Assessment Malpractice/irregularities

- g) Assessment for Recognition of Prior Learning (RPL) may lead to award of part and/or full qualification.

Certification

A candidate will be issued with a Certificate of Competency upon demonstration of competence in a core Unit of Competency. To be issued with the Kenya National TVET Certificate in ICT Operator level 4, the candidate must demonstrate competence in all the Units of Competency as given in the qualification pack. Statement of Attainment certificate may be awarded upon demonstration of competence in certifiable element within a unit.

These certificates will be issued by TVET CDACC

MODULE 1

COMPUTER ESSENTIALS

ISCED UNIT CODE: 0611 351 01A

TVET CDACC UNIT CODE: IT/CU/ICTA/CR/01/4/MA

Relationship to Occupational Standards

This unit addresses the unit of competency: Perform Computer Essentials

Duration of unit: 120 Hours

Unit Description

This unit of learning covers the learning outcomes, content, assessment methods, methods of delivery and resources required to perform computer essentials. It involves manage computer devices, manage desktop settings, perform file management, manage computer software and perform online jobs.

Summary of Learning Outcomes

S/No	Learning Outcomes	Durations(Hours)
1.	Manage computer devices	20
2.	Manage desktop settings	30
3.	Perform file management	20
4.	Manage computer software	20
5.	To Perform online jobs	30
Total		120

Learning outcomes, Content and Suggested Assessment Methods

Learning outcome	Content	Suggested Assessment Methods
1. Manage computer devices	1.1. Selection of Computer Hardware devices 1.1.1. Introduction to computer devices 1.1.1.1. Meaning of computer hardware devices 1.1.1.2. Identification of computer	<ul style="list-style-type: none">• Practical• Oral questions• Written tests• Observation• Reports

	<p>components and port</p> <p>1.1.2. Computer case, monitor, keyboard, and mouse</p> <p>1.1.3. All the parts inside the computer case, such as the hard disk drive, motherboard and video cards</p> <p>1.1.3.1. Classification of computer hardware devices</p> <p>1.2. Disassembling of computer hardware devices</p> <p>1.2.1. Cleaning of computer devices</p> <p>1.3. Assembling of Computer Hardware devices</p> <p>1.3.1. Types of Computer Hardware devices</p> <p>1.3.2. Functions of various computer hardware devices</p> <p>1.3.3. Connecting computer hardware devices e.g. monitor, System Unit</p> <p>1.4. Booting of computer</p> <p>1.4.1. Introduction to booting</p> <p>1.4.2. Types of booting</p> <p>1.4.2.1. Cold Booting</p> <p>1.4.2.2. Warm booting</p> <p>1.5. Connecting computer peripheral devices</p> <p>1.5.1. Types of computer peripheral devices</p> <p>1.1.1.1. Printer</p> <p>1.1.1.2. Speaker</p> <p>1.1.1.3. Mouse</p> <p>1.1.1.4. Keyboard</p> <p>1.1.1.5. Projector</p> <p>1.5.2. Configuration of peripheral devices</p>	<ul style="list-style-type: none"> Portfolio of evidence
2. Manage desktop settings	<p>2.1 Customization of desktop icons</p> <p>2.1.1 Introduction to desktop icons and settings</p> <p>2.2 Date and time settings</p>	<ul style="list-style-type: none"> Practical Oral questions Written tests

	2.3 Desktop settings customization 2.3.1 Background colour and pictures 2.3.2 Themes 2.3.3 Taskbar 2.3.4 Menu bar 2.3.5 Text size 2.3.6 Brightness	<ul style="list-style-type: none"> • Observation • Reports • Portfolio of evidence
3. Perform file management	3.1 Creating files and folders 3.1.1 Introduction to computer files and folders 3.1.2 Creation of files and folders 3.1.3 Compression and extraction of folders 3.2 Transferring files and folders 3.2.1 sharing of folders and files 3.3 File protection 3.3.1 Password 3.3.2 Encryption	<ul style="list-style-type: none"> • Practical • Oral questions • Written tests • Observation • Reports • Portfolio of evidence
4. Manage computer software	4.1 Selecting data backup media 4.1.1 Types of data Backup media 4.2 Performing data backup 4.3 Installation of computer software 4.3.1 Introduction to computer software 4.3.2 Types of computer software 4.3.2.1 Applications 4.3.2.2 Operating systems 4.3.2.3 Utility programs 4.3.3 Configuration of computer software 4.4 Optimization of computer software 4.4.1 Updating computer software 4.4.2 Computer disk cleanup	<ul style="list-style-type: none"> • Practical • Oral questions • Written tests • Observation • Reports • Portfolio of evidence
5. Perform Online Jobs	5.1. Introduction to online working 5.1.1. Types of online Jobs 5.1.2. Online job platforms (Upwork, Freelancer, Fiverr)	<ul style="list-style-type: none"> • Practical Assessment • Project • Third Party Report

	5.2. Online account and profile management 5.3. Identifying online jobs bidding 5.4. Online digital identity 5.5. Online job bidding 5.6. Executing online tasks 5.7. Management of online payment accounts.	<ul style="list-style-type: none"> • Portfolio of Evidence • Written Assessment • Oral Questioning
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Suggested methods of Instruction

- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Group discussions
- Direct instructions

Recommended resources for 25 trainees

S/No.	Category/Item	Description/Specifications	Quantity	Recommended Ratio (Trainee: Item)
A	Learning Materials			
1.	Textbooks		5 pcs	5:1
2.	Installation manuals		5 pcs	5:1
3.	Flip Charts		5 pcs	5:1
4.	PowerPoint presentations	For trainer's use		
5.	Installation CDs/DVDs			
B	Learning Facilities & infrastructure			
6.	Lecture/theory room		1	25:1

7.	Computer laboratory		1	25:1
C	Consumable materials			
8.	Printing papers		1 ream	1:20
9.	Foolscaps		1 ream	1:20
10.	Toners		2 pcs	13:1
11.	Assorted colour of whiteboard markers			
D	Tools and Equipment			
12.	Computers		25 pcs	1:1
13.	Projector		1 pcs	25:1
14.	Printers		2 pcs	13:1
15.	Whiteboard		1 pcs	25:1
16.	Flash drives		5 pcs	5:1
17.	External Hard drive		5 pcs	5:1
18.	System Software suite		5 pcs	5:1
19.	Application Software suite		5 pcs	5:1
20.	Computer Repair Tool box		5	5:1

COMPUTER OPERATIONS

ISCED UNIT CODE: 0611 351 02A

TVET CDACC UNIT CODE: IT/CU/ICTA/CR/02/4/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Perform Computer Operations

Duration of Unit: 150 Hours

Unit Description

This unit of learning covers the learning outcomes, content, assessment methods, methods of delivery and resources required to perform computer operations. It involves processing computerized word documents, manipulating computerized spreadsheets, maintaining computerized databases, preparing powerpoint presentation slides, manipulating graphic application and performing online collaboration.

Summary of Learning Outcomes

S/No	Learning Outcomes	Durations (Hours)
1.	Process computerized word document	30
2.	Manipulate computerized spreadsheet	30
3.	Maintain computerized database	30
4.	Prepare Power point presentation	20
5.	Manipulate graphic application	25
6.	Perform online collaboration	15
Total Hours:		150

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Process	1.1 Ergonomics risk factors	<ul style="list-style-type: none">Practical assessment

computerized word document	<p>1.2 Creation of computerized word document</p> <p>1.2.1 Introduction to word document</p> <p>1.2.2 Types of word processors</p> <p>1.2.3 Creating word document</p> <p>1.2.4 Editing and formatting word document</p> <p>1.2.5 Word document editing features</p> <p>1.2.5.1 Text editing</p> <p>1.2.5.2 Paragraph editing</p> <p>1.2.5.3 Document editing</p> <p>1.2.6 Word document formatting features</p> <p>1.2.6.1 Text formatting</p> <p>1.2.6.2 Paragraph formatting</p> <p>1.2.6.3 Document formatting</p> <p>1.2.7 Enhancing productivity</p> <p>1.2.7.1 Set basic options/ preferences</p> <p>1.2.7.2 Help resources</p> <p>1.2.7.3 Use magnification/zoom tools</p> <p>1.2.7.4 Display, hide built-in tool bar</p> <p>1.3 Creation and manipulation of tables</p> <p>1.3.1 Inserting tables</p> <p>1.3.2 Working with tables</p> <p>1.4 Mail merge</p> <p>1.4.1 Mail merge preparation</p> <p>1.4.1 Mail merge output</p> <p>1.5 Inserting word processing objects</p> <p>1.5.1 Picture</p>	<ul style="list-style-type: none"> ● Simulations ● Project ● Observation Checklist ● Product Checklist ● Written assessment ● Portfolio of evidence
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	1.5.2 Shapes 1.5.3 Table 1.5.4 Charts 1.6 Generating list of figures and table of content 1.6.1 List of figures 1.6.2 Table of content 1.7 Printing of computerized word document 1.7.1 Print setup 1.7.2 Printing	
2. Manipulate computerized spreadsheet	2.1 Creation of Computerized spreadsheet workbook 2.1.1 Spreadsheet concepts 2.1.2 Elements of spreadsheet window 2.1.2.1 Worksheet 2.1.2.2 workbook 2.1.2.3 Rows 2.1.2.4 columns 2.1.2.5 Cells 2.2 Cell referencing 2.2.1.1 Relative cell referencing 2.2.1.2 Absolute cell referencing 2.2.1.3 Mixed cell referencing 2.2.2 Spreadsheet editing features 2.2.2.1 Worksheet editing 2.2.2.2 Inserting rows/columns	<ul style="list-style-type: none"> ● Practical assessment ● Simulations ● Project ● Observation Checklist ● Product Checklist ● Written assessment ● Portfolio of evidence

	<p>2.2.2.3 Removing rows/columns</p> <p>2.2.2.4 Adjusting row heights and column width</p> <p>2.2.2.5 Inserting worksheets</p> <p>2.2.2.6 Renaming worksheets</p> <p>2.2.2.7 Move or copy worksheets</p> <p>2.2.2.8 Deleting worksheets</p> <p>2.2.3 Data manipulation in spreadsheets</p> <p>2.2.3.1 Data entry</p> <p>2.2.3.2 Types of data</p> <p>2.3 Formulas and functions</p> <p>2.3.1.1 Formulas and functions syntax</p> <p>2.3.1.2 Arithmetic functions</p> <p>2.3.1.3 logical functions</p> <p>2.3.1.4 Look up functions</p> <p>2.3.2 Computerized spreadsheet worksheet formatting</p> <p>2.3.2.1 Font styles</p> <p>2.3.2.2 Alignment</p> <p>2.3.2.3 Borders and shading</p> <p>2.3.2.4 Header and footer</p> <p>2.4 Charts generation</p>	
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	2.4.1.1 Types of charts 2.4.1.2 Insert charts 2.4.1.3 Labelling and Editing charts 2.4.1.4 Computerized spreadsheet workbook printing 2.4.1.5 Print setup 2.4.1.6 Printing	
3. Maintain computerised database	3.1 Computerised database user requirements collection 3.1.1 Introduction to database 3.1.1.1 Key concepts 3.1.1.2 Database organisation 3.1.1.3 Database relationships 3.1.1.4 Database operations 3.1.2 Collection of User requirements 3.2 Design Computerised database schema 3.2.1 Creating database models 3.2.1.1 ERD models 3.2.1.2 Relational models 3.3 Creation of Computerised database objects 3.3.1 Database Objects 3.3.1.1 Tables 3.3.1.2 Records 3.3.1.3 Fields 3.3.1.4 Keys	<ul style="list-style-type: none"> ● Practical assessment ● Simulations ● Project ● Observation Checklist ● Product Checklist ● Written assessment ● Portfolio of evidence

	3.3.1.5 Forms 3.3.1.6 Queries 3.3.1.7 Reports 3.4 Data manipulation 3.4.1 Inserting records 3.4.2 Retrieving records 3.4.3 Deleting records 3.4.4 Updating record 3.4.5 Printing database objects 3.4.5.1 Tables 3.4.5.2 Forms 3.4.5.3 Queries 3.4.5.4 Reports	
4. Prepare Power point presentation	4.1 Collecting PowerPoint Presentation requirements 4.1.1 Definition of terms 4.1.2 Presentation requirements 4.1.3 Types of presentation software 4.1.4 Elements of presentation window 4.2 Creating PowerPoint slides 4.2.1 Types of presentation layout 4.2.2 Factors to consider when designing presentation layout 4.2.3 Design a PowerPoint presentation 4.2.4 Create a PowerPoint presentation 4.2.5 Save a PowerPoint presentation	<ul style="list-style-type: none"> ● Practical assessment ● Simulations ● Project ● Observation Checklist ● Product Checklist ● Written assessment ● Portfolio of evidence

	<p>4.3 Exhibition of presentation views</p> <p>4.2.1 Slide views</p> <p>4.2.2 Working with presentations</p> <p>4.3.1.1 Switch between open PowerPoint presentations</p> <p>4.4 Perform animation and transitions</p> <p>4.4.1 Slide animation</p> <p>4.4.2 Slide transition</p> <p>4.5 Manipulation of PowerPoint slides</p> <p>4.5.1 Adding data/text to a slide</p> <p>4.5.2 Formatting data/text</p> <p>4.5.3 Move/copy/delete a slide</p> <p>4.5.4 Inserting header and footer</p> <p>4.5.5 Presentation objects</p> <p>4.5.5.1 Tables</p> <p>4.5.5.2 Charts</p> <p>4.6 Printing of PowerPoint slides</p> <p>4.6.1 Print setup</p> <p>4.6.2 Printing PowerPoint presentation</p>	
5. Manipulate graphic application	<p>5.1 Identifying graphic design requirements</p> <p>5.1.1 Definition of terms</p> <p>5.1.2 Graphic application requirements</p> <p>5.1.3 Types of graphic application software</p> <p>5.1.4 Types of publications designs</p> <p>5.1.4.1 Templates</p>	<ul style="list-style-type: none"> ● Practical assessment ● Simulations ● Project ● Written assessment ● Portfolio of evidence

	<ul style="list-style-type: none"> 5.1.4.2 Banners 5.1.4.3 Booklets 5.1.4.4 Brochures 5.1.4.5 Flyers 5.1.4.6 Posters 5.1.4.7 Cards 5.1.4.8 Certificates 5.1.4.9 Magazines 5.1.5 Elements of Graphic application window 	
	<ul style="list-style-type: none"> 5.2 Creation of graphic design <ul style="list-style-type: none"> 5.2.1 Perform basic tasks using graphic application software <ul style="list-style-type: none"> 5.2.1.1 Publication type 5.2.1.2 Page setup 5.2.1.3 Ruler/guides 5.2.1.4 Page views 5.2.2 Add content to a publication 5.2.3 Edit content to a publication 5.2.4 Format text and paragraphs in a publication 5.2.5 Page formatting in a publication <ul style="list-style-type: none"> 5.2.5.1 Columns 5.2.5.2 Borders and shading 5.2.5.3 Headers and footers 5.2.5.4 Background 5.2.5.5 Watermarks 5.2.5.6 Orientation 	

	<p>5.2.6 Work with graphics objects in a publication</p> <p>5.2.6.1 Textbox</p> <p>5.2.6.2 Tables</p> <p>5.2.6.3 Shapes</p> <p>5.2.6.4 Pictures</p> <p>5.2.6.5 (PNG, JPEG, GIF)</p> <p>5.3 Publishing of graphic design</p> <p>5.3.1 Prepare a publication</p> <p>5.3.2 Print setup</p> <p>5.3.3 Printing publication</p>	
6. Perform document production	<p>6.1 Printing documents</p> <p>6.1.1 Introduction to document production</p> <p>6.1.2 Types of printers</p> <p>6.1.3 Document printing</p> <p>6.2 Document scanning</p> <p>6.2.1 Types of scanners</p> <p>6.2.2 Document scanning</p> <p>6.3 Document duplication</p>	<ul style="list-style-type: none"> • Practical assessment • Simulations • Project • Observation Checklist • Product Checklist • Written assessment • Portfolio of evidence
7. Perform Online Collaboration	<p>7.1 Identification of Online collaboration tools</p> <p>7.1.1 Definition of online collaboration</p> <p>7.1.2 Importance of online collaboration</p> <p>7.1.3 Factors to consider when choosing an online collaboration tool</p> <p>7.1.4 Online collaboration tools</p> <p>7.1.4.1 Microsoft teams</p> <p>7.1.4.2 Skype</p>	<ul style="list-style-type: none"> • Practical assessment • Simulations • Project • Observation Checklist • Product Checklist • Written assessment • Portfolio of evidence

	<ul style="list-style-type: none"> 7.1.4.3 Google drive 7.1.4.4 Zoom 7.1.4.5 Google meet 7.1.4.6 Slack 	
	<ul style="list-style-type: none"> 7.2 Online collaboration preparation <ul style="list-style-type: none"> 7.2.1 Online collaboration key concepts 7.2.2 Common setup features <ul style="list-style-type: none"> 7.2.2.1 Download software to support online collaboration tools 7.2.2.2 Register and/ or set a user account 7.2.3 Preparation for online collaboration 7.3 Application of online collaborative tools <ul style="list-style-type: none"> 7.3.1 Using online collaborative tools <ul style="list-style-type: none"> 7.3.1.1 Online storage media 7.3.1.2 Using email <ul style="list-style-type: none"> 7.3.1.2.1 Sending and receiving email 7.3.1.2.2 Tools and settings 7.3.1.2.3 Organizing email 7.3.1.3 Using calendars 7.3.1.4 Online calendars 7.3.1.5 Social media 7.3.1.6 Online learning environment 7.3.1.7 Synchronization tools 7.4 Demonstrating Mobile collaborations 	

	7.4.1 Key concepts in mobile applications	
	7.4.2 Mobile applications permissions	
	7.4.3 Synchronization	

Suggested Delivery Methods

- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Group discussions
- Facilitation using active learning strategies

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Trainee: Item)
A	Learning Materials			
1.	Textbooks		5 pcs	5:1
2.	Installation manuals		5 pcs	5:1
3.	Flip Charts		5 pcs	5:1
4.	PowerPoint presentations	For trainer's use		
5.	Magazines/brochures/business cards			
B	Learning Facilities & infrastructure			
6.	Lecture/theory room		1	25:1
7.	Laboratory		1	25:1

C	Consumable materials			
8.	Printing papers		1 ream	1:20
9.	Foolscaps		1 ream	
10.	Toners/cartridges		2 pcs	13:1
11.	Assorted colour of whiteboard markers			
D	Tools and Equipment			
12.	Computers		25 pcs	1:1
13.	Projector		1 pc	25:1
14.	Printers		2 pcs	1:13
15.	Whiteboard		1 pc	25:1
16.	Flash drives		5 pcs	5:1
17.	1 External Hard drive		1 pcs	25:1
18.	Application software suite		5 pcs	5:1

MODULE II

COMPUTER NETWORK SETUP

ISCED UNIT CODE: 0612 351 03A

TVET CADCC UNIT CODE: IT/CU/ICTA/CR/03/4/MA

Relationship to Occupational Standards

This unit addresses the unit of competency: Setup Computer Network

Duration of unit: 200 Hours

Unit Description:

This unit of learning covers the learning outcomes, content, assessment methods, methods of delivery and resources required to setup computer network. It involves terminating network cables, connecting network cables and performing computer network Maintenance.

Summary of Learning Outcomes

S/No	Learning Outcomes	Duration (Hours)
1.	Terminate Computer network cables	70
2.	Connect Computer network cables	70
3.	Perform Computer network Maintenance	60
Total		200

Learning outcomes, Content and Suggested Assessment Methods

Learning outcome	Content	Suggested Assessment Methods
1. Terminate Computer network cables	1.1 Selecting Network devices 1.1.1 Introduction to computer networks 1.1.2 Types of network topologies 1.1.3 Types of network devices 1.1.4 Components of a computer	<ul style="list-style-type: none">• Practical• Oral questions• Written tests• Observation• Portfolio of evidence

	<p>networks</p> <p>1.1.5 Types of network tools</p> <p>1.1.6 Cable colour coding</p> <p>1.2 Network cable trunking</p> <p>1.2.1 Definition cable trunking</p> <p>1.2.2 Types of cable trunking</p> <p>1.2.3 Tools used in cabling trunking</p> <p>1.2.3.1 Measuring tape</p> <p>1.2.3.2 Pencil</p> <p>1.2.3.3 Cable ties</p> <p>1.2.3.4 Wire cutters</p> <p>1.2.3.5 Safety equipment</p> <p>1.2.3.6 Spirit level</p> <p>1.2.3.7 Drill</p> <p>1.2.3.8 Screwdriver</p> <p>1.3 Network cable termination</p> <p>1.3.1 Definition of networking cable termination</p> <p>1.3.2 Tools for cable termination</p> <p>1.3.2.1 RJ45 connectors</p> <p>1.3.2.2 Crimping tool</p> <p>1.3.2.3 Wire stripper</p> <p>1.3.2.4 Cable cutter</p> <p>1.3.2 Process of cable termination</p> <p>1.3.2.1 Cable stripping</p> <p>1.3.2.2 Colour coding</p> <p>1.3.2.3 Cable crimping</p>	
<p>2. Connect Computer network cables</p>	<p>2.1 Observing safety measures in networking</p> <p>2.1.1 Computer network safety measures</p> <p>2.1.1.1 Overall/apron/dust coat</p> <p>2.1.1.2 Gloves</p>	<ul style="list-style-type: none"> • Practical • Oral questions • Written tests • Observation • Portfolio of

	2.1.1.3 Safety boots 2.1.1.4 Ergonomics 2.1.1.5 First AID kit 2.2 Setup network devices 2.4.1 Router 2.4.2 Switch 2.4.3 Bridge 2.4.4 Hub 2.4.5 Patch panels 2.4.6 Access point 2.3 Network cable testing 2.3.1 Cable testing methods 2.3.2 Continuity Testing 2.3.3 Wire Mapping 2.3.4 Cable Length Testing 2.3.5 Fault Detection 2.3.6 Cable testing tools 2.3.6.1 Cable tester 2.3.6.2 Multimeter 2.3.6.3 Crimping tool 2.3.6.4 Wire Stripper and cutter 2.4 Network cable connection 2.4.1 Networking standards 2.4.1.1 HTTP 2.4.1.2 IEEE 802.1 2.4.1.3 TCP/IP 2.5 Network connection establishment 2.6 Network testing	evidence
3. Perform Computer Network Maintenance	3.1 Monitoring computer network 3.1.1 Introduction to computer network monitoring and maintenance 3.1.2 Computer network	<ul style="list-style-type: none"> • Practical • Oral questions • Written tests • Observation

	monitoring physical tools 3.1.2.1 Cable testers 3.1.2.2 Crimping tool 3.1.2.3 Stripping tool 3.1.3 Physical networking device status monitoring 3.1.3.1 Port and interface 3.1.3.2 Cable and connection 3.1.3.3 Power supply 3.1.3.4 Network optimization 3.2 Troubleshooting Computer network 3.3 Optimizing Computer network 3.3.1 Upgrading network hardware devices 3.3.2 Upgrading computer network cables	<ul style="list-style-type: none"> Portfolio of evidence
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Suggested methods of Instruction

- In Instructor led facilitation of theory
- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Group discussions
- Simulation

Recommended resources for 25 trainees

S/No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Trainee: Item)
A	Learning Materials			

1.	Textbooks		13 pcs	13:1
2.	Installation manuals		5pcs	5:1
3.	Charts			
4.	PowerPoint presentations	For trainer's use		
B	Learning Facilities & infrastructure			
5.	Lecture/theory room		1	25:1
6.	Computer Laboratory		1	25:1
7.	Internet Connection			
C	Consumable materials			
8.	Printing papers		1 ream	1:20
9.	Toners		2 pcs	13:1
10.	Assorted colour of whiteboard markers			
D	Tools and Equipment			
1.	Computers		25 pcs	1:1
2.	Projector		1 pc	25:1
3.	Signal testers		5 pcs	5:1
4.	Header checker		25 pcs	1:1
5.	Crimping tools		25 pcs	1:1
6.	Cable tester		5 pcs	5:1
7.	Switches		5pcs	5:1
8.	Repeaters		5pcs	5:1
9.	Routers/modem		5pcs	5:1
10.	Network tool kit		25 pcs	1:1
11.	RJ45		300 pcs	1:10
12.	UTP Ethernet Cable		300 metres	1:10

13.	Antistatic gloves		25 pairs	1:1
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COMPUTER REPAIR AND MAINTENANCE

UNIT CODE: 0714 351 04A

TVET CADCC UNIT CODE: IT/CU/ICTA/CR/04/4/MA

Relationship to Occupational Standards

This unit addresses the Unit of Competency: Perform Computer Repair and Maintenance

Duration of Unit: 200 Hours

Unit Description

This unit of learning covers the learning outcomes, content, assessment methods, methods of delivery and resources required to perform computer repair and maintenance. It involves performing computer troubleshooting, repairing faulty components, testing computer component functionality and performing computer maintenance.

Summary of Learning Outcomes

S/No	Learning Outcomes	Durations (Hours)
1.	Perform computer troubleshooting	50
2.	Repair faulty components.	60
3.	Test computer component functionality	60
4.	Perform computer maintenance	30
Total		200

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Perform computer troubleshooting	1.1. User data assessment 1.1.1. Introduction to computer repair and maintenance 1.1.2. Documenting faulty computer user data 1.2. Computer problems identification 1.2.1. Computer troubleshooting approaches 1.2.2. Basic computer hardware faults 1.2.3. Methods of information gathering 1.2.4. User data analysis 1.3. Determining solution to the problem 1.3.1. Computer hardware faults remedies	<ul style="list-style-type: none"> • Practical assessment • Project • Observation Checklist • Product Checklist • Written assessment • Portfolio of evidence

	1.3.2. Test hypothesis 1.3.3. Problem Identification 1.3.4. Documentation of solution	
2. Repair faulty components.	2.1 Selection of computer components for replacement 2.1.1 Computer hardware components 2.1.1.1 Factors to consider in selecting computer components 2.1.1.2 computer hardware components parts acquisition 2.2 Assembly of tools for repairing or replacing 2.2.1 Computer repair and maintenance tools 2.2.1.1 Straight-head screwdriver, large and small 2.2.1.2 Phillips-head screwdriver, large and small 2.2.1.3 Tweezers or part retriever 2.2.1.4 Needle-nosed pliers 2.2.1.5 Wire cutters 2.2.1.6 Chip extractor 2.2.1.7 Hex wrench set 2.2.1.8 Torx screwdriver 2.3 Observation of Safety procedures 2.3.1 Safety measures and procedures 2.3.1.1 Personal Protective Equipment's 2.3.1.2 Proper use of tools and equipment 2.3.1.3 Fire safety 2.3.1.4 Classes of fires 2.3.1.5 Fire extinguishers 2.3.1.6 Emergency procedures 2.3.1.7 First AID kit 2.3.1.8 Emergency contact	<ul style="list-style-type: none"> • Practical assessment • Project • Observation Checklist • Product Checklist • Written assessment • Portfolio of evidence

	<p>2.3.1.9 Contingency measures</p> <p>2.4 Repair and replacing computer components</p> <p>2.4.1 Computer components Instruction manuals</p> <p>2.4.2 Computer components disassembly process</p> <p>2.4.3 Reassembling repaired or replaced computer components</p> <p>2.5 Disposing faulty or obsolete computer hardware components</p> <p>2.5.1 Pollution</p> <p>2.5.2 E- waste</p> <p>2.5.3 Hazards</p> <p>2.5.4 Types of E-waste</p> <p>2.5.5 Proper disposal methods</p>	
3. Test computer component functionality	<p>3.1 Performing POST on computer</p> <p>3.2 Performing computer component test</p> <p>3.2.1 Importance of testing</p> <p>3.2.2 Testing techniques</p> <p>3.2.2.1 Testing of repaired or replaced components</p> <p>3.2.3 Evaluation of test Results</p> <p>3.3 Computer component's functionality report</p> <p>3.3.1 Generation of test results report</p>	<ul style="list-style-type: none"> • Practical assessment • Project • Observation Checklist • Product Checklist • Written assessment • Portfolio of evidence

4. Perform computer maintenance	4.1 Computer maintenance scheduling 4.1.1 Introduction to computer maintenance 4.1.1.1 Definition of computer maintenance 4.1.1.2 Importance of computer maintenance 4.1.2 Types of computer maintenance 4.1.3 Prepare computer maintenance schedule 4.2 Performing computer maintenance 4.2.1 Computer maintenance utilities 4.2.2 Uses of computer maintenance utilities 4.2.3 Perform computer maintenance 4.3 Computer maintenance report 4.3.1 Importance of computer maintenance report 4.3.2 Components of computer maintenance report	<ul style="list-style-type: none"> • Practical assessment • Project • Observation Checklist • Product Checklist • Written assessment • Portfolio of evidence
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Suggested Methods of Instruction

- Instructor led facilitation using active learning strategies
- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Group discussions
- Direct instructions

Recommended Resources for 25 Trainees

S/No.	Category/Item	Description/Specifications	Quantity	Recommended Ratio (Trainee: Item)
A	Learning Materials			

1.	Textbooks		5 pcs	5:1
2.	Installation manuals		5 pcs	5:1
3.	Flip Charts		5 pcs	5:1
4.	PowerPoint presentations	For trainer's use		
5.	Magazines/brochures/business cards			
B	Learning Facilities & infrastructure			
6.	Lecture/theory room		1	25:1
7.	Computer Laboratory		1	25:1
C	Consumable materials			
8.	Printing papers		1 ream	1:20
9.	Foolscaps		1 ream	
10.	Toners		2 pcs	13:1
11.	Assorted colour of whiteboard markers			
D	Tools and Equipment			
12.	Computers		25 pcs	1:1
13.	Projector		1 pcs	25:1
14.	Printers		2 pcs	13:1
15.	Whiteboard		1 pcs	25:1
16.	Flash drives		5 pcs	5:1
17.	1 External Hard drive		1 pcs	25:1

18.	Computer Repair Tool box		5	5:1
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