REPUBLIC OF KENYA

COMPETENCY BASED MODULAR CURRICULUM

FOR

COMPUTER SCIENCE

KNQF LEVEL 6

(CYCLE 3)

PROGRAMME ISCED CODE: 0613 554 A.

TVET CDACC
P.O. BOX 15745-00100
NAIROBI

INFORMATION SYSTEMS DEVELOPMENT

ISCED UNIT CODE: 0613 554 11A

UNIT CODE: ICT/CU/CS/CR/06/6/MA

Relationship to Occupational Standards

This unit addresses the unit of competency: Develop Information System

Duration of Unit: 200 hours

Unit Description

This unit covers the competencies required to develop an information system. It involves understanding fundamentals of information systems, applying security measures to data, hardware, software in automated environment, understanding the software development process, demonstrating human computer interaction principles, understanding the VB.net programming environment and developing and testing a VB.NET application.

Summary of Learning Outcomes

Learning outcomes	Duration (hours)
1. Fundamentals of Information Systems	30
2. Security measures to data, hardware, software in automated environment	20
3. Software Development Process	30
4. Human Computer Interaction Principles	20
5. VB.NET programming environment	50
6. Develop and test a VB.NET application	50
TOTAL	**200**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Fundamentals of Information Systems	1.1 Information systems 1.1.1 Definition 1.1.2 Components 1.2 Types of information systems 1.2.1 Transaction Processing Systems 1.2.2 Management Information Systems 1.2.3 Decision Support Systems 1.2.4 Executive Information Systems 1.2.5 Office Automation Systems 1.3 Emerging trends in information systems 1.4 Recommendation of information systems for different scenarios 1.5 Information system security 1.5.1 Definition 1.5.2 Information security management system 1.5.3 Tools for information system security 1.5.4 Firewalls 1.5.5 Virtual private networks 1.6 Mobile security 1.6.1 Geolocation software 1.6.2 Remote data removal software	• Oral questioning • Written tests • Practical tests

	1.7 Web security 1.7.1 Cyber security 1.7.2 Technologies 1.7.3 Web threats 1.7.4 Defence strategies	
2. Security measures to data, hardware, software in automated environment	2.1 Data security and control 2.2 Security threats and control measures 2.3 Types of computer crimes 2.4 Detection and protection against computer crimes 2.5 Laws governing protection of ICT	• Written tests • Oral questioning • Project • Practical tests
3. Software Development Process	3.1 Software Development Life Cycle 3.2 Software Development Methodologies 3.2.1 Waterfall 3.2.2 Spiral 3.2.3 Rapid Application Development 3.2.4 Agile Development 3.3 Modelling techniques 3.3.1 Data Flow Diagrams 3.3.2 Entity Relation Diagrams 3.3.3 UML diagrams 3.4 Creation of models for given scenarios	• Written tests • Oral questioning • Practical tests
4. Human Computer Interaction Principles	4.1 Human Computer Interaction 4.1.1 Definition 4.1.2 Role of interaction design 4.1.3 Interaction styles 4.1.4 Interaction elements 4.1.5 Mistakes in interaction design	• Practical • Oral questioning • Observation • Written tests

	4.2 Interface design principles 4.3 Prescribing interaction choices and recognition of interaction flaws	
5. VB.NET programming environment	5.1 The .Net framework 5.1.1 Applications supported 5.1.2 Components of the .Net framework 5.2 Installation of Visual Studio 5.3 Features of VB.Net 5.4 The Integrated Development Environment (IDE) 5.4.1 Definition of IDE 5.4.2 Parts of VB.Net IDE 5.5 VB.Net program structure 5.5.1 VB.NET syntax 5.5.2 Namespace declaration 5.5.3 Class or module 5.5.4 Procedures 5.5.5 Data types, variables, constants 5.5.6 The Main procedure 5.5.7 Statements and Expressions (Variable declarations, operations, control statements) 5.5.8 Comments 5.6 Creating aVB.Net project 5.6.1 Saving Forms and Project 5.6.2 Compiling a Project	• Practical tests • Oral tests • Written tests
6. VB.NET application development and testing	6.1 Basic VB.Net Controls 6.1.1 test Controls and their purpose	• Practical tests • Oral tests

	6.1.2 Standard naming conventions for controls 6.2 Elements of a control 6.2.1 Properties 6.2.2 Methods 6.2.3 Events 6.3 Demonstrating Properties, Methods and Events 6.3.1 Properties for basic controls 6.3.2 Setting properties at design time and run time 6.3.3 Methods for basic controls 6.3.4 Events for basic controls 6.4 Demonstrating event handling 6.4.1 Mouse events 6.4.2 Keyboard events 6.5 Designing VB.NET form using HCI principles 6.6 Connection of VB.Net applications to a database 6.6.1 ADO.Net object model 6.6.2 Demonstrating Database connection using the Data Provider 6.6.3 Demonstrating creation of tables using Dataset components 6.7 Deployment of VB.NET VB.Net applications 6.7.1 Purpose deployment 6.7.2 Demonstrating deployment steps	• Written tests

Suggested Methods of Instruction

- Presentations and practical demonstrations by trainer;
- Guided learner activities and research to develop underpinning knowledge;
- Supervised practical assignments and projects;
- Visiting expert from the ICT sector;
- Industrial visits

Recommended Resources for 25 trainees

S/No.	Category	Item Description / Specifications	Quantity	Recommended Ratio (Trainee: Item)
1.	**Learning Materials**	Textbooks	25	1:1
2.		Printed handouts	25 Sets	1:1
3.		User guides for Visual Studio and VB.NET programming	25	1:1
4.		Access to e-books, online platforms	25 Logins	1:1
5.	**Learning Facilities**	ICT Lab with desks, chairs, projector, whiteboard	1 Room	Shared
6.	**Infrastructure**	Internet access	1 Setup	Shared
7.		Power backup system	1 System	Shared
8.	**Tools & Equipment**	Computers with Visual Studio & SQL Server installed	25	1:1
9.		External storage devices	25	1:1
10.		Visual Studio Community Edition	Installed	N/A
11.		Antivirus/firewall	Installed	N/A
12.	**Consumable Materials**	Notebooks, pens, printed worksheets	25 Sets	1:1

13.		Project submission sheets, software license logs	25 Sets	1:1