COMPETENCY BASED CURRICULUM

FOR

INFORMATION COMMUNICATION TECHNOLOGY

KNQF LEVEL 5

PROGRAMME ISCED CODE: 061 2454A

COMPUTERIZED DATABASE SYSTEMS

UNIT CODE: 0612 451 08A

Duration of Unit: 200 Hours

Relationship to Occupational Standards

This unit addresses the unit of competency: Manage Computerized Database Systems

Unit Description:

This unit covers the competencies required to manage computerized database systems. It involves designing computerized database, creating computerized database, manipulating computerized database, testing computerized database and maintaining computerized database.

Summary of Learning Outcomes:

Learning Outcomes	Durations (Hours)
1. Perform website Application user need analysis	30
2. Design website application	50
3. Develop website application	50
4. Host the website application	30
5. Test the website application	20
6. Maintain the website application	20
Total Hours	**200**

Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcome	Content	Suggested Assessment Methods
1. Perform Website User Needs Analysis	1.1 Website user requirements identification	• Practical test • Projects

	1.1.1 Introduction to Web Programming 1.1.1.1 Definition of key web terms. 1.1.1.2 History of the Internet, the Web, CSS & HTML 1.1.1.3 Web programming/scripting languages 1.1.1.4 Current trends 1.1.1. Importance of websites 1.1.2. Types of websites 1.1.3. Website design requirements 1.1.1.5 Types of user requirements 1.1.1.5.1 Functional requirements 1.1.1.5.2 Non-functional requirements 1.1.1.6 User requirements identification 1.1.1.7 User requirements analysis 1.2 Website user requirements documentation 1.2.1 User requirements documentation tools 1.2.2 Preparation of user requirements specifications document	• Learner Portfolio of evidence • Oral questioning • Interviews • Third party report • Written tests • Case study

	1.3 Website user requirements specifications review 1.3.1 Importance of user requirement review 1.3.2 User requirement review techniques 1.3.3 User requirements specifications validation and verification 1.4 User requirements review process 1.5 Updating user requirements specifications document	
2. Design Website	2.1 Website application design tools 2.1.1 Introduction website design 2.1.1.1 Website design principles 2.1.1.2 Website Design Process 2.1.1.3 User Experience (UX) design 2.1.2 Introduction website design tools 2.1.2.1 Figma 2.1.2.2 WordPress 2.1.2.3 Canvas 2.1.2.4 Wix 2.1.2.5 Adobe Dreamweaver 2.1.3 Factors to consider when selecting design tools 2.1.4 Installation and configuration design tools	• Practical test • Projects • Learner Portfolio of evidence • Oral questioning • Interviews • Third party report • Written tests • Case study

	2.2 Implementation of website design methods 2.2.1 User-Cantered Design 2.2.2 Visual Design 2.2.2.1 Elements of Visual Design 2.2.3 Interaction Design 2.2.4 Wireframing and Prototyping 2.3 Development of website application visual hierarchy 2.3.1 Graphical user interface 2.3.2 Hierarchy of Elements 2.3.2.1 Typography 2.3.2.2 Color and contrast 2.3.2.3 Spacing and Layout 2.3.2.4 Reading patterns 2.3.2.5 Size and scale 2.3.2.6 Proximity and repetition 2.3.2.7 Alignment 2.3.2.8 Texture and style 2.4 Creation of website application site map 2.4.1 Importance of site maps for web design and SEO 2.4.2 Types of site maps 2.4.3 Creating visual site maps 2.4.4 Creating website wireframes	
3. Develop The Website	1.1 Creation of web pages 1.1.1 HTML Coding 1.1.1.1 Introduction to HTML5	• Practical test • Projects

	1.1.1.2 HTML Tags 1.1.1.2.1 Structural elements and attributes 1.1.1.2.2 Formatting HTML documents 1.1.1.2.3 Tables 1.1.1.2.4 Linking Web Pages 1.1.1.2.5 Working with Layouts 1.1.1.2.6 Special effects and Animation using HTML5 1.1.1.2.7 Multimedia 1.1.1.2.8 Managing forms 1.1.1.2.9 DOM 1.1.1.2.10 Events 1.1.1.2.11 HTML frameworks (Bootstrap and Tailwind) 1.1.2 Cascading Style Sheets (CSS) 1.1.2.1 Introduction to CSS 1.1.2.2 Various types of styles sheets 1.1.2.3 Inheritance and cascading order 1.1.2.4 Formatting text, fonts, colours and Background 1.1.2.5 Exploring CSS class and ID attributes 1.1.2.6 HTML Tags 1.1.2.7 Block eleven elements	• Learner Portfolio of evidence • Oral questioning • Interviews • Third party report • Written tests • Case study

	1.1.2.8 Fundamentals of Document Object Model (DOM) 1.1.3 Website Scripting 1.1.3.1 Functions of scripting languages 1.1.3.2 Types of scripting languages 1.1.3.3 Java scripting 1.1.3.3.1 Introduction to JavaScript 1.1.3.3.2 Statements Syntax 1.1.3.3.3 Values & Variables 1.1.3.3.4 Operators 1.1.3.3.5 Statements 1.1.3.3.6 Event Handling 1.1.3.3.7 Timing Events 1.1.3.3.8 Functions and objects 1.2 Website Backend Creation 1.2.1 Database Creation 1.2.2 Introduction to MYSQL 1.2.3 File systems and databases 1.2.4 Relational database Models 1.2.5 SQL 1.2.6 Entity Relationship modelling 1.2.7 Normalization of database tables 1.2.8 Database design 1.2.9 Working with Database Schemas 1.2.10 Create-Read-Update-Destroy (CRUD) 1.2.11 Joins 1.2.12 Aggregate Functions and Groups 1.2.13 Sub Queries	

	1.3 Website application frontend and backend integration 1.3.1 PHP 1.3.1.1 Importance of PHP 1.3.1.2 Fundamentals of PHP Development 1.3.1.3 Various Data Types 1.3.1.4 Advanced PHP Functions 1.3.1.5 Classes 1.3.1.6 Objects 1.3.1.7 Various Database concepts 1.3.1.8 Cookies and Session Management 1.3.1.9 How to work with forms and system file 1.3.1.10 Error Handling 1.3.1.11 Secure PHP Programming 1.3.1.12 Performance Optimization of PHP Applications 1.3.1.13 Model View Controller (MVC) 1.3.2 Jquery: 1.3.2.1 Introduction to JQuery 1.3.2.2 Selectors 1.3.2.3 Jquery – DOM 1.3.2.4 Jquery Events 1.3.2.5 Ajax 1.3.2.6 UI (User Interface)	
2. Host the Website	2.1 Website application hosting platform 2.1.1 Introduction to website hosting 2.1.2 Types of website hosting services	• Practical test • Projects

	2.1.3 Factors to consider when selecting a host 2.1.4 Website hosting process 2.2 Server environment setup 2.2.1 Configuring hosting environment (cPanel, Plesk) 2.2.2 Installing web servers (Apache, nginx) 2.2.3 Database set up (MySQL, PostgreSQL) 2.3 Uploading website application files. 2.3.1 Methods of uploading files 2.3.2 Connecting files to the server 2.4 Website server configuration 2.4.1 Importance of website server configuration 2.4.2 Setting up virtual hosts 2.4.3 Configuring directory structures and permissions 2.4.4 Managing server files and directories 2.4.5 Implementing SSL/TLS 2.4.6 Firewall and access control configurations 2.4.7 Backup configuration 2.4.8 Setting server monitoring tools	• Learner Portfolio of evidence • Oral questioning • Interviews • Third party report • Written tests • Case study
3. Test The Website	5.1 Website application test plan 3.1.1 Importance of website application testing 3.1.2 Importance of website application test plan	• Practical test • Projects • Learner Portfolio of evidence • Oral questioning

	3.1.3 Preparation of website application test plan 5.2 Website application testing techniques selection 3.2.1 Types of website application testing techniques 3.2.1.1 Functionality Testing 3.2.1.2 Black box 3.2.1.3 Regression 3.2.1.4 unit 3.2.1.5 Usability Testing 3.2.1.6 Interface Testing 3.2.1.7 Compatibility Testing 3.2.1.8 Performance Testing 3.2.1.9 Security Testing 3.2.2 Factors to consider when selecting website application testing techniques 5.3 Website application testing 3.3.1 Website application testing tools 3.3.2 Website application testing standards, procedures and user requirements 3.3.3 Preparation of website application test data 3.3.4 Perform website application testing 5.4 Test report development 3.4.1 Importance of website application test report	• Interviews • Third party report • Written tests • Case study.

	3.4.2 Website application test report development tools 3.4.3 Preparation of website application test report	
4. Maintain The Website	4.1 Website monitoring 4.1.1 Importance of website maintenance. 4.1.2 Website monitoring tools 4.1.3 Integrate website monitoring tools (Google analytics) 4.1.4 Analysis of website traffic and performance data 4.2 Development of Monitoring report 4.2.1 Importance of Monitoring report 4.2.2 Website monitoring via logging practices 4.2.3 Preparation of Monitoring report 4.3 Fixing website application bugs 4.4 Updating website application 4.4.1 Updating and archiving of website content 4.4.2 Creation of website pages 4.4.3 Website version upgrading 4.4.4 Vulnerability scans and updates 4.5 Backing up Website 4.5.1 Importance of website data back up 4.5.2 Types of website data back up 4.5.3 Website data backup tools	• Practical test • Projects • Learner Portfolio of evidence • Oral questioning • Interviews • Third party report • Written tests • Case study.

Suggested Delivery Methods

- Demonstration by trainer
- Practical work by trainee
- Viewing of related videos
- Group discussions
- Direct instructions
- Instructor led 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	For trainee's use	5pcs	5:1
2.	Installation manuals	For trainer's use		
3.	Charts	For trainer's use		
4.	PowerPoint presentations	For trainer's use		
B	**Learning Facilities & infrastructure**			
1.	Lecture/theory room	For training	1	25:1
2.	Computer Laboratory	For training	1	25:1
C	**Consumable materials**			
3.	Printing papers	For printing	1 ream	1:20
4.	Toners	For printers	2 pcs	13:1
5.	Assorted colour of whiteboard markers	For trainer's use		

D	**Tools and Equipment**			
6.	Computers	For training	25 pcs	1:1
7.	Projector	For trainer's use	1pc	25:1
8.	Printers	For printing	5 pcs	5:1
9.	Whiteboard	For trainer's use	1pc	25:1
10.	flash drives	For training	5 pcs	5:1
11.	External Hard drive	For training	5 pcs	5:1
12.	Microsoft Access	For training	25 pcs	1:1
13.	MYSQL	For training	25 pcs	1:1
14.	Test Data Generator	For training	25 pcs	1:1
15.	WAMP/XAMP	For training	25 pcs	1:1