Ethiopian TVET-System

Revised Model Curriculum

DATABASE ADMINISTRATION SERVICES

Level III

Based on
Occupational Standard (OS)

September 2013

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). Responsibility for Curriculum Development will be given to the Regional TVET-Authorities and TVET-Providers.

This curriculum has been developed by a group of experts from different Regional TVET-Authorities based on the Occupational Standard for Database Administration. It has the character of a model curriculum and is an example on how to transform the occupational requirements as defined in the respective Occupational Standard into an adequate curriculum.

The curriculum development process has been actively supported and facilitated by the Ministry of Education – in line with one of its mandates to provide technical support to the regions – and by the TVET-Reform Component of the Engineering Capacity Building Program.

1. TVET- Program Design

1.1 TVET- Program Title: Database Administrator Level III

1.2 TVET- Program Description

The Program is designed to develop the necessary knowledge, skills and attitude of the trainees to the standard required by the OS. The contents of this program are in line with the Occupational Standard (OS). Trainees who successfully completed this program need to undergo national assessment and be found competent before he/ she is qualified to work in the Information Communication Technology sector in the field of Database Administration.

The prime objective of this training program is to equip the trainees with the identified competences specified in the OS. Graduates are therefore expected to Administer Databases 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 –

ICT DBA3 01 0710	Gather Data to Identify Business Requirements
ICT DBA3 02 0710	Identify Physical Database Requirements
ICT DBA3 03 0710	Design a Database
ICT DBA3 04 0710	Use Basic Structured Query Language
ICT DBA3 05 0710	Design Program Logic
ICT DBA3 06 0710	Test Physical Database Implementation
ICT DBA3 07 0710	Complete Database Backup and Recovery
ICT DBA3 08 0710	Create Technical Documentation
ICT DBA3 09 0710	Model Data Objects
ICT DBA3 10 0710	Monitor Implementation of Work plan/Activities
ICT DBA3 11 0710	Apply Quality Control
ICT DBA3 12 0710	Lead Small Teams
ICT DBA3 13 0710	Lead Workplace Communication
ICT DBA3 14 0710	Improve Business Practice

1.4 Duration of the TVET-Program

The Program will have duration of **695 _hours_** including the on-the-job practice or cooperative training time and Improving Business Practice.

1.5 Qualification Level and Certification

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

The trainee can exit after successfully completing the Modules in one level and will be awarded the equivalent institutional certificate on the level completed. The trainee 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 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 Ministry of Education.

Other requirements:
- ability to speak, read and understand English
- computer literate

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 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)
ICT DBA3 01 0811	Gather Data to Identify Business Requirements	ICT DBA3 M01 0111	Gathering Data to Identify Business Requirements	• Identify key information sources • Gather data through formal and informal processes • Ensure analysis is accurate and complete • Submit analysis and gain agreement	30
ICT DBA3 02 0811	Identify Physical Database Requirements	ICT DBA3 M02 0111	Identifying Physical Database Requirements	• Identify database scope • Identify database requirements • Identify security requirements • Seek client feedback and approval	60
ICT DBA3 03 0811	Design a Database	ICT DBA3 M03 0111	Designing a Database	• Determine database requirements • Develop logical data model • Design data structures • Design queries, screens and reports • Design access and security systems • Confirm database design	100

ICT DBA3 04 0811	Use Basic Structured Query Language	ICT DBA3 M04 0111	Using Basic Structured Query Language	• Write an SQL statement to retrieve and sort data • Write SQL statements that use functions • Write SQL statements that use aggregation and filtering • Write and execute SQL sub-queries	120
ICT DBA3 05 0811	Design Program Logic	ICT DBA3 M05 0111	Designing Program Logic	• Select the program logic design approach • Document the program logic or design • Validate the design	60
ICT DBA3 06 0811	Test Physical Database Implementation	ICT DBA3 M06 0111	Testing Physical Database Implementation	• Undertake database management system modeling • Test database performance • Seek client feedback and signoff	60

ICT DBA3 07 0811	Complete Database Backup and Recovery	ICT DBA3 M07 0111	Completing Database Backup and Recovery	• Review database architecture • Determine backup methods appropriate to database requirements • Establish recovery points and disaster recovery procedures	50
ICT DBA3 08 0811	Create Technical Documentation	ICT DBA3 M08 0111	Creating Technical Documentation	• Identify and analyze documentation needs • Design documentation • Develop documentation • Evaluate and edit documentation	30
ICT DBA3 09 0811	Model Data Objects	ICT DBA3 M09 0111	Modelling Data Objects	• Identify entities and relationships • Develop normalization • Validate model	60
ICT DBA3 10 0811	Monitor Implementation of Work plan/Activities	ICT DBA3 M10 0111	Monitoring Implementation of Work plan/Activities	• Monitor and improve workplace operations • Plan and organize workflow • Maintain workplace records • Solve problems and make decisions	20

ICT DBA3 11 0811	Apply Quality Control	ICT DBA3 M11 0111	Applying Quality Control	• Confirm quality standards • Assess quality of service delivered • Record information • Study causes of quality deviations • Complete documentation	20
ICT DBA3 12 0811	Lead Small Teams	ICT DBA3 M12 0111	Leading Small Teams	• Provide team leadership • Assign responsibilities • Set performance expectations for team members • Supervised team performance	20
ICT DBA3 13 0811	Lead Workplace Communication	ICT DBA3 M13 0111	Leading Workplace Communication	• Communicate information about workplace processes • Lead workplace discussion • Identify and communicate issues arising in the workplace	**20**

| ICT DBA3 14 0811 | Improve Business Practice | ICT DBA3 M14 0111 | Improving Business Practice | 11.1 Diagnose the business
11.2 Benchmark the business
11.3 Develop plans to improve business performance
11.4 Develop marketing and promotional plans
11.5 Develop business growth plans
11.6 Implement and monitor plans | 45 |

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

Program Duration (Grand Total)   **695hrs**

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 unit of competence 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 B Level and have satisfactory practical experiences or equivalent qualifications.

1.12 Learning Module

LEARNING MODULE 1	Logo of TVET Provider
TVET PROGRAM TITLE: **Database Administration Level III**	

MODULE TITLE: **Gathering Data to Identify Business Requirements**
MODULE CODE : **ICT DBA3 M01 0811**

NOMINAL DURATION: **30 hrs**

MODULE DESCRIPTION:

This module covers the knowledge, skills and attitude required to identify, analyze and document business requirements.

LEARNING OUTCOMES:

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

LO1 Identify key information sources

LO2 Develop logical data model

LO3 Ensure analysis is accurate and complete

LO4 Submit analysis and gain agreement

MODULE CONTENTS:

LO1 Identifying the key information sources
- 1.1 Overview of data and information
- 1.2 Source of information
- 1.3 Identifying information repository
- 1.4 Reviewing current organization document
  - 1.4.1 Business forms
  - 1.4.2 Policy documents
  - 1.4.3 Financial statements
  - 1.4.4 Performance reports
  - 1.4.5 Annual reports
- 1.5 Developing critical questionnaires
  - 1.5.1 Using open and close ended questions

LO2 Gather data through formal and informal process
- 2.1 Data gathering techniques
  - 2.1.1 Questionnaires
  - 2.1.2 Interviews
  - 2.1.3 Observation
  - 2.1.4 Surveying
- 2.2 Reviewing Reports and data sources
- 2.3 Confirming Business critical factors
  - 2.3.1 Response times
  - 2.3.2 Scalability
  - 2.3.3 Traffic
  - 2.3.4 Data knowledge and management
  - 2.3.5 Security
  - 2.3.6 Customer demographics
  - 2.3.7 Customer confidence
- 2.4 Defining and analyzing business priority

LO3 Ensure analysis is accurate and complete
- 3.1 Analyzing and evaluating accurate and consistent information
- 3.2 Identifying conflict information
- 3.3 Resolving conflicts information

LO4 Submit analysis and gain agreements
- 4.1 Preparing detailed document

Database administration	Version: 1	Page No.
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       4.1.1   Using documentation standards
       4.1.2   Using organizational templates
   4.2 Writing succinct and appropriate document
   4.3 Ensuring the availability of data gathered to client

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1   Identify key information sources

- Information repositories are identified across the business
- Current organizational documentation are reviewed
- Critical questions are developed to elicit information from key stakeholders using a mixture of open and closed questions
- Information gathering techniques are ensured to use a quality assurance methodology and meet budgetary constraints

LO2 Gather data through formal and informal processes

- Information gathering workshops and interviews are conducted to gather data
- Reports and other data sources are reviewed for relevant business information
- Business-critical factors relating to current and future directions of the organization are confirmed with   stakeholders
- Group and individual responses are analyzed to clearly define business priorities

LO3   Ensure analysis is accurate and complete

- Information gathered are analyzed and evaluated for accuracy and consistency
- Document conflicts in information are gathered
- Conflicts in information or points of view are resolved with stakeholders

LO4 Submit analysis and gain agreement

- Detailed document according to documentation standards and organizational templates are prepared
- Document in a style are written that is succinct and appropriate to the audience
- Data gathered are communicated to client to gain consensus and agreement on business requirements

ICT DBA3 M01 0811		Gathering Data to Identify Business Requirements		
Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A.	Learning Materials			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1
2.	Textbooks		25	1:1
3.	Reference Books	• Database Design for Mere Mortals™, Second Edition		1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	Learning Facilities & Infrastructure			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	Consumable Materials			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
D.	Tools and Equipments			
1				
2	Operating systems	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above		
3	ISP Service	• Current Internet Technologies		
4	UPS	• 750 Volt Amper	25	
5	Divider	• American socket supporter	13	
6	Multimedia projector	- LCD	1	Per section

LEARNING MODULE 2	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Identifying Physical Database Requirements**
MODULE CODE : **ICT DBA3 M02 0811**

NOMINAL DURATION: **60 hrs**

MODULE DESCRIPTION:
This module covers the knowledge, skills and attitude required to create a physical database using a data dictionary and design specifications

LEARNING OUTCOMES:
At the end of the module the trainee will be able to:
LO1 Identify database scope
LO2 Identify database requirements
LO3 Identify security requirements
LO4 Seek client feedback and approval

MODULE CONTENTS:

LO1 Identify database scope
    1.1 Reviewing system architecture and user requirements
        1.1.1   Operating system
        1.1.2   DBMS software
        1.1.3   Configuration
    1.2 Determining Database size and technical specifications
    1.3 Documenting Database and scope of project
    1.4 Identifying types of database
    1.5 Evaluating Several database management systems and making appropriate selection

LO2 Identify database requirements
    2.1 Reviewing Technical specifications
    2.2 Identifying database tables and relationships
    2.3 Identifying data dictionary,table attributes and keys
    2.4 Developing database reports using acceptance criteria
        2.4.1   Timeframe
        2.4.2   Cost implications
        2.4.3   Technical and logistical

LO3 Identify security requirements
    3.1   Reviewing system security
        3.1.1   Application System
        3.1.2   Computer System
        3.1.3   Network system
        3.1.4   DBMS
        3.1.5   Financial and business system
    3.2 Clarifying and confirming DBMS and user security
    3.3   Identifying, evaluating and recording DB performance recovery and audit trails

LO4 Seek client feedback and approval
    4.1   Presenting DB scope and technical requirements to user for feedback
    4.2   Reviewing user feedback to adjust DB
    4.3 Presenting DB and documentation to user for final approval

LEARNING STRATEGIES:
- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:
- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Identify database scope
- Requirements of the user and current system architecture are reviewed
- Database size is determined from requirements and technical specifications
- Database and scope of project are documented
- Several database management systems are evaluated against requirements and make appropriate selection

LO2 Identify database requirements
- Technical specifications are reviewed for the database
- Database tables and relationships are identified

- Database data dictionary, table attributes and keys are identified
- Database reports are developed based on acceptance criteria and requirements

LO3 Identify security requirements
- System security plan is reviewed
- Chosen database management system and user security required for the database clarified and confirmed to ensure database security is aligned to security system plan
- Database performance, recovery and audit trail needs are identified, evaluated and recorded

LO4 Seek client feedback and approval
- Database scope and technical requirements are presented to user for feedback
- User feedback are reviewed and database adjusted as required
- Database and documentation are presented to user for final approval

ICT DBA3 M02 0811		**Identifying Physical Database Requirements**		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1
2.	Textbooks		25	1:1
3.	Reference Books			1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	*Learning Facilities & Infrastructure*			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	*Consumable Materials*			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4

2.	Stationery	- Whiteboard marker, printing paper, printer ink		
3	Flash disk	San disk or similar 16GB	8	1:1
D.	**Tools and Equipments**			
1	Samples			
2	Operating systems	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above	7	1:25
3	ISP	• Current Internet Technologies		
4	UPS	• 750 Volt Amper	25	
5	Divider	• American socket supporter	13	
6	Multimedia projector	- LCD	1	Per section
7	Printer	- Capability of A3 printing - color printing capability	1	Per section

LEARNING MODULE 3	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Designing a Database**
MODULE CODE: **ICT DBA3 M03 0811**

NOMINAL DURATION: **100 hrs**

MODULE DESCRIPTION:

This module covers the knowledge, skills and attitude to establish client needs and technical requirements, and to design a database that meets those requirements.

LEARNING OUTCOMES:

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

LO1 Determine database requirements

LO2 Develop logical data model

LO3 Design data structures

LO4 Design queries, screens and reports

LO5 Design access and security systems

LO6 Confirm database design

MODULE CONTENTS:

LO1 Determine database requirements
    1.1 Conducting user need analysis to determine database functionality
    1.2 Identifying technical requirements
    1.3 Developing conceptual model of the database
    1.4 Submitting conceptual model to the client for review
    1.5 Evaluating and changing the client feedback

LO2 Develop logical data model

2.1   Identifying attributes
2.2   Determining data types
2.3   Undertaking normalization of attributes
2.4   Developing Entity Relationship to clarify cardinality of relationships.
2.5   Normalizing   data and entity relationships diagrams
2.6   Forwarding documentation to client

LO3 Design data structures

3.1   Confirming primary and foreign keys for tables
3.2   Reviewing client business rules
3.3   Identifying referential integrity constraints
3.4   Establishing DBMS constraints
3.5   Developing validation rules for data
3.6   Designing indexes
3.7   Developing data dictionary
3.8   Documenting database design

LO4 Design queries, screens and reports

4.1   Designing user interface for database
4.2   Designing queries based on requirements
4.3   Designing output reports based on requirements
4.4   Comparing physical design with conceptual model/user needs
4.5   Incorporating changes

LO5 Design access and security systems

5.1   Reviewing business security plan
5.2   Designing password and access system
5.3   Identifying multiple-user requirements
5.4   Developing client access profiles

LO6 Confirm database design

6.1 Identifying database back-up and recovery requirements
6.2 Developing and documenting database back-up and recovery procedures
6.3 Submitting database and documentation to client for final approval

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Determine database requirements

- Client is met and a user needs analysis is conducted to determine database functionality
- Results of user needs analysis are analyzed to identify technical requirements
- A conceptual model of the database is developed.
- Conceptual model to client is submitted for review
- Client feedback is evaluated and changes are made as required.

LO2 Develop logical data model

- Attributes are identified and data types are determined
- Normalization of attributes are undertaken
- Entity relationship diagram are developed to clarify cardinality of relationships
- Document attributes are normalized data and entity relationship diagram
- Documentation to client is forwarded for confirmation

LO3 Design data structures

- Primary and foreign keys are confirmed for tables
- Client business rules are reviewed
- Referential integrity constraints are identified
- Relevant database management system constraints are established and database design is incorporated
- Validation rules are developed for data
- Indexes are designed and data dictionary developed
- Database design is documented

LO4 Design queries, screens and reports

- User interface for database is designed, including menus, input screens and outputs
- Queries based on requirements are designed
- Output reports are designed based on *requirements*
- Physical design with conceptual model /user needs analysis is compared
- Changes as required are incorporated

LO5 Design access and security systems

- Business *security plan* is reviewed as basis for commencing access and security design
- Password and access system is designed for database
- Multiple-user requirements are identified
- Client access profiles are developed using client business model

LO6 Confirm database design

- Database back-up and recovery requirements are identified
- Database back-up and recovery procedures are developed and documented
- Database and documentation is submitted to client for final approval

	ICT DBA3 M03 0811		Designing a Database		
Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)	
A.	*Learning Materials*				
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet Operation sheet	25	1:1	
2.	Textbooks		25	1:1	
3.	Reference Books			1:10	
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25	
B.	*Learning Facilities & Infrastructure*				
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25	
2.	Library	- Multipurpose			
3.	Shelves	- wooden or metal	5		
4.	Locker	- wooden or metal	2		
5.	Cabinet	- metal	1		
C.	*Consumable Materials*				
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4	
2.	Stationery	- Whiteboard marker, printing paper, printer ink			
D.	**Tools and Equipments**				
1	Samples				
2	Operating systems	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above, DBMS software	7	1:25	
3	ISP	• Current Internet Technologies			
4	UPS	• 750 Volt Ampere	25		
5	Divider	• American socket supporter	13		
6	Desktop Computer including its peripherals	- w/15 inch flat monitor and 120 GB Hard disk; RAM size 1GB; 3Gz or above	25	1:1	
7	Multimedia projector	- LCD	1	Per section	
8	Printer	- Capability of A3 printing - color printing capability	1	Per section	
9	Network toolkit	- set/case	5	1:5	
10	Maintenance toolkit	- set/case	5	1:5	
11	Scanner	- HP 2055	2	1:13	

LEARNING MODULE 4	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Using Basic Structured Query Language**
MODULE CODE : **ICT DBA3 M04 0811**

NOMINAL DURATION:120 **hrs**

MODULE DESCRIPTION:
This module covers the knowledge, skills and attitude to use a basic structured query language (SQL) to define, create and manipulate database structures and associated data in a relational database.

LEARNING OUTCOMES:
At the end of the module the trainee will be able to:
LO1 Write an SQL statement to retrieve and sort data
LO2 Write SQL statements that use functions
LO3 Write SQL statements that use aggregation and filtering
LO4 Write and execute SQL sub-queries

MODULE CONTENTS:
LO1 Write an SQL Statement to retrieve and sort data
   1.1 Introduction to SQL
        1.1.1   What is SQL?
        1.1.2   Categories of SQL Application
   1.2 Installing DBMS software
        1.2.1   Hardware Requirements
        1.2.2   Operating System Requirements
        1.2.3   Install DBMS (SQL Server)
   1.3 Creating database
        1.3.1   Creating tables
        1.3.2   Inserting records
        1.3.3   Select statement
          1.3.3.1 Literals and data types
          1.3.3.2 Expressions
             1.3.3.2.1 Comparison operators
             1.3.3.2.2 Boolean operators
             1.3.3.2.3 Arithmetical operators
             1.3.3.2.4 Mathematical functions
          1.3.3.3   Assigning names to result columns
          1.3.3.4   Select clause
          1.3.3.5   Selecting all columns (*)
          1.3.3.6   From clause
          1.3.3.7   Where clause
          1.3.3.8   Updating tables
          1.3.3.9   Inserting new rows
          1.3.3.10 Deleting new rows
          1.3.3.11 Updating values in rows
     1.4   Combining table Expressions
          1.4.1   Combining with union
          1.4.2   Rules for using union
          1.4.3   Combining with intersect

1.4.4   Combining with Except

1.5 Keeping duplicate rows

1.6 Set operators and NULL values

1.7 Combining multiple set operators

1.8 Set operator and Theory

LO2 Write SQL statements that use functions

2.1   Removing duplicate rows with DISTINCT when two rows are equal

2.2   Introduction to functions

   2.2.1 Date functions

   2.2.2 Aggregation function

      2.2.2.1 The count function

      2.2.2.2 The MAX and MIN function

      2.2.2.3 The SUM and AVERAGE function

      2.2.2.4 The Variance and Standard Deviation function

LO3 Write SQL statements that use aggregation and filtering

3.1   Aggregating data by multiple columns using "group by"

3.2   Sorting aggregated data in the query output

3.3   Filtering aggregated data using the "having" clause

LO4 Write and execute SQL Queries

4.1   Single and nested queries

4.2   Sub queries

   4.2.1   In a select list

   4.2.2   In where clause

4.3   Operators in sub queries

   4.3.1   Revising the IN operators

   4.3.1.1 Using the ANY SOME and ALL operators

   4.3.1.2 Using EXITE operator

   4.3.1.3 Using having clause

4.4   Correlated sub queries

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Write an SQL statement to retrieve and sort data

- All the data from a table is retrieved following work procedure.
- Data from specific columns in a single table is retrieved.
- 'Order by' is used to sort query output.
- Number of rows restricted is retrieved by placing criteria in the 'where' clause.
- Number of rows restricted is retrieved by placing specific criteria in the select statement.
- Comparison operators in the 'where' clause is used to compare numeric, character, string,
   date and time data
- Boolean operators is used with the correct precedence

- Criteria in the 'where' clause is used to check for a range of values, to select values from a
  list, and to check for values that match a pattern
- SQL syntax is used to suppress duplicate values from query results
- Action is taken to exclude null values from a query result

LO2 Write SQL statements that use functions
- Arithmetical operators is used with the correct precedence
- String functions and operators is used to obtain the required query output
- Mathematical functions is used to obtain the required output, where required
- Date functions are used to obtain the required output
- SQL aggregate functions are used to obtain the required out put

LO3 Write SQL statements that use aggregation and filtering
- 'Group by' used to aggregate data by multiple columns
- Aggregated data is sorted in the query output
- Aggregated data is filtered using the 'having' clause

LO4 Write and execute SQL sub-queries
- Single and nested sub-queries are constructed
- Sub-queries are constructed that return a single row, and multiple rows
- Correlated sub-queries are used to retrieve required data
- Sub-queries are written that use aggregates

ICT DBA3 M04 0811		Using Basic Structured Query Language		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1
2.	Textbooks		25	1:1

3.	Reference Books	• Fundamentals of |Database System 4th Edition Ramez Elmasri • Department of Computer Science Engineering University of Texas at Arlington Shamkant B. Navathe College of Computing Georgia Institute of Technology • Beginning SQL Server 2005 For Developers (2006) Robin Dewson, • Beginning SQL (2005) Paul Wilton and John W. Colby • Database Design for Mere Mortals™, Second Edition • Introduction to SQL: Mastering the Relational Database Language, Fourth Edition/20th Anniversary Edition By Rick F. van der Lans		1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	**_Learning Facilities & Infrastructure_**			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	1:5
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	Consumable Materials			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
3	Flash disk	San disk or similar 16GB	8	1:1
D.	Tools and Equipments			
1	Samples	• Sample Database	7	1:25
2	Operating systems and Software	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above and MBMS		
3	ISP	• Current Internet Technologies		
4	UPS	• 750 Volt Amper	25	1:1
5	Divider	• American socket supporter	13	1:2
6	Desktop Computer including its peripherals	- w/15 inch flat monitor and 120 GB Hard disk; RAM size 1GB; 3Gz or above	25	1:1
7	Multimedia projector	- LCD	1	Per section
8	Printer	- Capability of A3 printing	1	Per section

		- color printing capability		

LEARNING MODULE 5	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Designing Program Logic**
MODULE CODE : **ICT DBA3 M05 0811**

NOMINAL DURATION: **60 hrs**

MODULE DESCRIPTION:

This module covers the knowledge, skills and attitude required to describe the various processes in a program to ensure that there is understanding of user and design requirements.

LEARNING OUTCOMES:

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

LO1 select the program logic design approach

LO2 document the program logic or design

LO3 validate the design

MODULE CONTENTS:
LO1 Select the program design approach
    1.1 Obtaining design documentation and requirement for the program clarification
        1.1.1 Pseudo code
        1.1.2 Flow charts
        1.1.3 ERD
        1.1.4 DFD
        1.1.5 HIPO Charts
        1.1.6 Data Structure
        1.1.7 RAD
        1.1.8 CASE Tools
        1.1.9 Prototyping
        1.1.10 Modular programming
    1.2 Taking design approach in coding the modules
LO2 Document the program logic or design
  2.1 Structuring diagrams of flow and modules
      2.1.1 Visio
      2.1.2 Smart Draw
  2.2 Documenting program scope and limits
  2.3 Documenting special routines or procedures
  2.4 Identifying and revising references for tables, inputs, outputs other programs
  2.5 Applying Templates
LO3 Validate the design
  3.1 Checking program flow, states or conditions
      3.1.1 Interfaces and compliance to design documentation requirement
  3.2 Gaining feedback or input from appropriate person

LEARNING STRATEGIES:
- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:
- Oral questioning
- Written test
- Observation during performing activities

ASSESSMENT CRITERIA:

LO1 Select the program logic design approach
- Design documentation is obtained and the requirements for the programs are reviewed and clarified.
- Design approach to be taken in coding and the modules and links required is determined

LO2 Document the program logic or design
- Diagrams of program flow and modules are structured according to project standards
- Program scope and limits are documented according to project standards
- Special routines or procedures are documented or referenced according to project standards
- References for tables, files, inputs, outputs, and other program functionalities are identified and revised according to program requirements

- Templates are used as applicable

LO3 Validate the design

- Program flow, states or conditions are checked for interfaces and compliance to design documentation requirements

- Feedback/input is gained from appropriate person as needed

	ICT DBA3 M05 0811	**Designing Program Logic**		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1
2.	Textbooks	Any relevant system analysis book	25	1:1

3.	Reference Books	- Fundamentals of |Database System 4th Edition **Ramez Elmasri** - Department of Computer Science Engineering University of Texas at Arlington **Shamkant B. N avathe** - College of Computing Georgia Institute of Technology - Beginning SQL Server 2005 For Developers (2006) Robin Dewson, - Beginning SQL (2005) Paul Wilton and John W. Colby - Database Design for Mere Mortals™, Second Edition - Introduction to SQL: Mastering the Relational Database Language, Fourth Edition/20th Anniversary Edition By Rick F. van der Lans		1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	***Learning Facilities & Infrastructure***			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	***Consumable Materials***			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
D.	***Tools and Equipments***			
1	Samples	• Sample program Logic	7	1:25

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2	Operating systems and Case Tools	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above and like Visio, Smart Draw etc		
3	ISP	• Current Internet Technologies		
4	Desktop Computer including its peripherals	- w/15 inch flat monitor and 120 GB Hard disk; RAM size 1GB; 3Gz or above	25	1:1
5	Multimedia projector	- LCD	1	Per section
6	Printer	- Capability of A3 printing - color printing capability	1	Per section

LEARNING MODULE 6	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Testing Physical Database Implementation**
MODULE CODE : **ICT DBA3 M06 0811**

NOMINAL DURATION: **60 hrs**

MODULE DESCRIPTION:

This module covers the knowledge, skills and required to test database performance using database management system modeling.

LEARNING OUTCOMES:

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

LO1 Undertake database management system modeling

LO2 Test database performance

LO3 Seek client feedback and signoff

MODULE CONTENTS:

LO1 Undertake database management system modeling

   1.1 Reviewing database prototypes to detrmine acceptance criteria
      1.1.1. Acceptance criteria
         1.1.1.1. Timeframe
         1.1.1.2. Cost implication
         1.1.1.3. Technical and logistical cosideration
   1.2 Testing loaded data according to the technical sequence
      1.2.1. Naming standard of Keys
      1.2.2. Audit Trials
      1.2.3. Maintaining equipment inventory
      1.2.4. Client training and satisfaction reports
 1.3 Generating test schedule for the database of task to be performed
 1.4 Using Entity relationship Modeling High level coding data Model
      1.4.1 Entity types, entity sets, attributes, and sets
      1.4.2 Relationship type, relationship sets, roles and structural constraints
      1.4.3 Weak entity types
      1.4.4 Refining ER designing
      1.4.5 ERD naming, conventions, and design issues

LO2 Test Database Performance

   2.1 Evaluating database performance
   2.2 Idetifying discrepancy result
   2.3 Idetifying areas needed for enhancement and changes
   2.4 Modifying Database according to project standards
   2.5 Repeating performance testing

LO3 Seek client feedback and signoff

   3.1 Presenting and providing test result for feedback
   3.2 Incorporating clients' change request
   3.3 Securing client sign-off for testing process

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Undertake database management system modeling

- Database prototype is reviewed, as appropriate, to determine acceptance criteria and performance standards
- Test data is loaded according to the technical sequence detailed in documentation
- A test schedule is generated for the database of tasks to be performed and results expected

LO2 Test database performance

- Database performance is evaluated against acceptance criteria and performance standards
- Discrepancies in results are identified where expected outcomes do not meet acceptance criteria
- Areas needing enhancement is identified and changes to be made documented
- Database is modified according to project standards
- Performance testing is repeated until expected results are achieved

LO3 Seek client feedback and signoff

- Test results in a document is presented and provided to client for feedback
- Client change requests are incorporated as appropriate
- Client sign-off is secured for testing process

ICT DBA3 M06 0811		Testing Physical Database Implementation		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1

2.	Textbooks	Any relevant Database book	25	1:1
3.	Reference Books	• Fundamentals of |Database System 4th Edition Ramez Elmasri • Department of Computer Science Engineering University of Texas at Arlington Shamkant B. N avathe College of Computing Georgia Institute of Technology • Beginning SQL Server 2005 For Developers (2006) Robin Dewson, • Beginning SQL (2005) Paul Wilton and John W. Colby • Database Design for Mere Mortals™, Second Edition • Introduction to SQL: Mastering the Relational Database Language, Fourth Edition/20th Anniversary Edition By Rick F. van der Lans		1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	*Learning Facilities & Infrastructure*			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	*Consumable Materials*			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
D.	*Tools and Equipments*			
1	Samples		7	1:25

2	Operating systems and Software	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above and DBMS		
3	ISP	• Current Internet Technologies		
4	UPS	• 750 Volt Ampere	25	
5	Divider	• American socket supporter	13	
6	Desktop Computer including its peripherals	- w/15 inch flat monitor and 120 GB Hard disk; RAM size 1GB; 3Gz or above	25	1:1
7	Multimedia projector	- LCD	1	Per section
8	Printer	- Capability of A3 printing - color printing capability	1	Per section
9	Network toolkit	- set/case	5	1:5
10	Maintenance toolkit	- set/case	5	1:5
11	Scanner	- HP 2055	2	1:13

LEARNING MODULE 7	Logo of TVET Provider
TVET PROGRAM TITLE: **Database Administration Level III**	
MODULE TITLE: **Completing Database Backup and Recovery** MODULE CODE : **ICT DBA3 M07 0811**	
NOMINAL DURATION:50 **hrs**	
MODULE DESCRIPTION: This module covers the knowledge, skills and required to back-up and recover a database.	

LEARNING OUTCOMES:

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

LO1 Review database architecture

LO2 Determine backup methods appropriate to database requirements

LO3 Establish recovery points and disaster recovery procedures

MODULE CONTENTS:

LO1 Review database architecture

    1.1 Identifying architecture of a database file system

    1.2 Identifying risks and failure scenarios

LO2 Determine Backup methods appropriate to DB requirement

    2.1 Backup and recovery concepts

    2.2 Recovery techniques

    2.3 Recover immediate update

    2.4 Shadow paging

    2.5 The ARIES Recovery Algorithm

    2.6 Recovery in multi DB system

    2.7 DB Backup from Catastrophic failures

    2.8 Off-line and on-line file backup

    2.9 Disk mirroring and RAID

    2.10 Arranging Off-site copies

LO3 Establish recovery points and disaster recovery procedures

    3.1 Determining recovery points

    3.2 Testing the restore process

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Review database architecture

- The architecture of a database file system is identified and consequently, determined the most appropriate methods for back-up and recovery
- Risks and failure scenarios are identified and examined that are likely or possible

LO2 Determine backup methods appropriate to database requirements

- A range of back-up and restoration methods are evaluated based on organizational and security standard and on the assessment of likely or possible failure scenarios
- Full off-line back-ups are completed according to organizational and security standards with minimal down time
- On-line file back-ups are completed as determined by organizational and security standards and with minimal down time
- Disk mirroring and redundant array of inexpensive disks (RAID) hard disk configurations are

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employed to keep copies of files
- Off-site copies of back-up files are arranged

LO3 Establish recovery points and disaster recovery procedures

- Database recovery points are determined based on the back-up arrangements according to organizational Guidelines*.*
- The restore process is tested in order to ensure that the database can be restored to a given recovery point, with minimal down time
- The restoration of the database to the point of failure is completed, without loss of committed transactions

ICT DBA3 M07 0811		Completing Database Backup and Recovery		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM and other	- Teacher's made handouts - Job sheet - Information sheet - Operation sheet	25	1:1
2.	Textbooks	Any relevant database book	25	1:1

3.	Reference Books	• Fundamentals of |Database System 4th Edition Ramez Elmasri • Department of Computer Science Engineering University of Texas at Arlington Shamkant B. N avathe College of Computing Georgia Institute of Technology • Beginning SQL Server 2005 For Developers (2006) Robin Dewson, • Beginning SQL (2005) Paul Wilton and John W. Colby • Database Design for Mere Mortals™, Second Edition • Introduction to SQL: Mastering the Relational Database Language, Fourth Edition/20th Anniversary Edition By Rick F. van der Lans		1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	*Learning Facilities & Infrastructure*			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	*Consumable Materials*			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
3	Flash disk	San disk or similar 16GB	8	1:1
D.	**Tools and Equipments**			
1	Samples		7	1:25

2	Operating systems and Software	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above and Database management system Software		
3	ISP	• Current Internet Technologies		
4	UPS	• 750 Volt Amper	25	
5	Divider	• American socket supporter	13	
6	Desktop Computer including its peripherals	- w/15 inch flat monitor and 120 GB Hard disk; RAM size 1GB; 3Gz or above	25	1:1
7	Multimedia projector	- LCD	1	Per section
8	Printer	- Capability of A3 printing - color printing capability	1	Per section
9	Network toolkit	- set/case	5	1:5
10	Maintenance toolkit	- set/case	5	1:5

LEARNING MODULE 8	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Creating Technical Documentation**
MODULE CODE : **ICT DBA3 M08 0811**

NOMINAL DURATION: **30 hrs**

MODULE DESCRIPTION:
This module covers the knowledge, skills and required to create technical documentation that is clear to the target audience and easy to navigate.

LEARNING OUTCOMES:
LO1 Identify and analyze documentation needs
LO2 Design documentation
LO3 Develop documentation
LO4 Evaluate and edit documentation

MODULE CONTENTS:
LO1 Identify and analyze documentation needs
  1.1 Identifying client documetation requirement
  1.2 Interpreting and evaluating documentation requirement
  1.3 Investigating documentation standards
  1.4 Producing document and defining the scope
  1.5 Validating and confirmining the scope of work
LO2 Design documentation
  2.1 Identify required information
  2.2 Creating consistent document templates and style information requirements
  2.3 Understanding the system functionality
  2.4 Extracting the content that meets information requirements
        2.4.1 Copyright restriction
  2.5 Developing structures of technical documentation
        2.5.1 Flow of information
  2.6 Validating the technical documentation structure
LO3 Develop documentation
  3.1 Writing technical documentation
  3.2 Translating technical terminology
  3.3 Applying content format and style
LO4 Evaluate and edit documentation
  4.1 Submitting technical documentation
  4.2 Analyzing and gathering feedback
  4.3 Implementing feedback mechanisms in line with organization policies
        4.3.1 Verbal feedback
        4.3.2 Informal feedback
        4.3.3 Formal feedback
        4.3.4 Questionnaire
        4.3.5 Survey
        4.3.6 Group discussion
  4.4 Editing technical documentation

LEARNING STRATEGIES:
  - Lecture-discussion
  - Group work
  - Individual assignment

ASSESSMENT METHODS:
  - Interview/Written Test
  - Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:
LO1 Identify and analyze documentation needs
  - The client is consulted to identify documentation requirements.
  - Documentation requirements are interpreted and evaluated, and details with the client confirmed

- Industry and documentation standards are investigated for requirements
- The scope of work is defined and documented to be produced
- The client is consulted to validate and confirm the scope of work

LO2 Design documentation

- Information requirements are identified with reference to layout and structure documented
- Document templates and style guides are created consistent with information requirements
- A review of the system is conducted in order to understand its functionality
- Content that meets information requirements is extracted in accordance with relevant copyright restrictions
- The structure of the technical documentation is developed giving focus to the flow of information, style, tone and content format
- The technical documentation structure is validated with the client

LO3 Develop documentation

- Technical documentation is written based on the template and scope of work using the information gathered
- Technical terminology is translated into plain English where appropriated
- Content format and style is applied in accordance with relevant documentation standards and templates

LO4 Evaluate and edit documentation

- Technical documentation is submitted to appropriate person for reviewed
- Feedback is gathered and analyzed following working guideline.
- Alterations into the technical documentation is incorporated
- The technical documentation is edited for technical and grammatical accuracy

ICT DBA3 M08 0811		Creating Technical Documentation		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1
2.	Textbooks	Any relevant Technical documentation manual	25	1:1
3.	Reference Books	• Fundamentals of |Database System 4th Edition Ramez Elmasri • *Department of Computer Science Engineering* • *University of Texas at Arlington* Shamkant B. N avathe • *College of Computing*		1:10

		Georgia Institute of Technology • Beginning SQL Server 2005 For Developers (2006) Robin Dewson, • Beginning SQL (2005) Paul Wilton and John W. Colby • Database Design for Mere Mortals™, Second Edition • Introduction to SQL: Mastering the Relational Database Language, Fourth Edition/20th Anniversary Edition By Rick F. van der Lans		
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	*Learning Facilities & Infrastructure*			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	*Consumable Materials*			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
D.	**Tools and Equipments**			
1	Samples	Sample Technical Documentation Template	1	1:25
2	Operating systems	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above	25	1:25
3	ISP	• Current Internet Technologies		
4	UPS	• 750 Volt Amper	25	
5	Divider	• American socket supporter	13	
6	Desktop Computer including its peripherals	- w/15 inch flat monitor and 120 GB Hard disk; RAM size 1GB; 3Gz or above	25	1:1
7	Multimedia projector	- LCD	1	Per section
8	Printer	- Capability of A3 printing	1	Per section

		- color printing capability		
9	Network toolkit	- set/case	5	1:5
10	Maintenance toolkit	- set/case	5	1:5
11	Scanner	- HP 2055	2	1:13

LEARNING MODULE 9	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE **: Modeling Data Objects**
MODULE CODE : **ICT DBA3 M09 0811**

NOMINAL DURATION: **60 hrs**

MODULE DESCRIPTION:

This module covers the knowledge, skills and required to understand business operations, identify entities and data, diagrammatically represent their relationships and prepare a data model.

LEARNING OUTCOMES:

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

LO1 Identify entities and relationships

LO2 Develop normalization

LO3 Validate model

MODULE CONTENTS:

LO1 Identify entities and relationships
   1.1 Understanding and analyzing business operations
   1.2 Identify the scope of the system
      1.2.1   Databases
      1.2.2   Applications
      1.2.3   Servers
      1.2.4 Operating systems
      1.2.5 Gateways
      1.2.6 Application service provider and

      1.2.7   ISP
1.3   Identify Entity,data type and relationship
1.4   Reviewing business rules to determine impact
  1.3   Documenting Entity relationship Diagram
     1.5.1   Person, object or concept

LO2 Develop Normalization

2.1   Introduction to Normalization
     2.1.1. Functional dependencies
     2.1.2. Normal forms based on primary keys
     2.1.3. General definition of second and third normal forms
     2.1.4. Boyce Codd normal form
2.2   Comparing normalization and ER diagram
2.3   Reconciling differences between data

LO3 Validate data Model using Normalization

3.1   Validating data model with client
3.2   Resolving issues or recommendations
3.3   Documenting completed data model
3.4   Submitting final approval to client

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Identify entities and relationships

- Business data are analyzed to understand operations
- Boundaries of the system are identified
- Entities, attributes, data types and relationships of data are identified
- Business rules are reviewed to determine impact
- Relationships are documented in an entity relationship diagram

LO2 Develop normalization

- Normalization of business data undertaken and results are documented
- Normalization results are compared with entity relationship diagram
- Differences between data are reconciled, if any

LO3 Validate model

- Data model is validated with client
- Issues or recommendations arising are resolved
- Completed data model are documented
- Final approval is submitted to client

ICT DBA3 M09 0811		Modeling Data Objects		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1
2.	Textbooks	Any relevant database book	25	1:1
3.	Reference Books	• Fundamentals of |Database System 4th Edition Ramez Elmasri • Department of Computer Science Engineering University of Texas at Arlington Shamkant B. N avathe • College of Computing Georgia Institute of Technology • Beginning SQL Server 2005 For Developers (2006) Robin Dewson, • Beginning SQL (2005) Paul Wilton and John W. Colby • Database Design for Mere Mortals™, Second Edition • Introduction to SQL: Mastering the Relational Database Language, Fourth Edition/20th Anniversary Edition By Rick F. van der Lans		1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	*Learning Facilities & Infrastructure*			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25

2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	*Consumable Materials*			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
D.	**Tools and Equipments**			
1	Samples			
2	Operating systems	Any operating system that has multi-user ability, Linux, Mac OS, Windows XP or above		
3	ISP	• Current Internet Technologies		
4	UPS	• 750 Volt Amper	25	
5	Divider	• American socket supporter	13	
6	Desktop Computer including its peripherals	- w/15 inch flat monitor and 120 GB Hard disk; RAM size 1GB; 3Gz or above	25	1:1
7	Multimedia projector	- LCD	1	Per section
8	Printer	- Capability of A3 printing - color printing capability	1	Per section

LEARNING MODULE 10	Logo of TVET

	Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Monitoring Implementation of Work plan/Activities** MODULE CODE : **ICT DBA3 M10 0811**

NOMINAL DURATION: **20 hrs**

MODULE DESCRIPTION:

This module covers the knowledge, skills and required oversee and monitor the quality of work operations within an enterprise. This unit may be carried out by team leaders, supervisors or managers.

LEARNING OUTCOMES:

LO1 Monitor and improve workplace operations

LO2 Plan and organize workflow

LO3 Maintain workplace records

LO4 Solve problems and make decisions

MODULE CONTENTS:

LO 1 Monitor and improve work place operations
   1.1   Monitoring efficiency and service levels
   1.2   Supporting operations in the workplace
       1.2.1   Quality Assurance
       1.2.2   Principles of quality assurance
   1.3   Identifying and adjusting quality problems and issues
   1.4   Changing procedures and systems to improve efficiency and effectiveness
   1.5   Consulting colleagues to improve efficiency and service levels
LO2 Plan and organize work flow
   2.1   Assessing current work load
       2.2.1   Scheduling work to enhance efficiency and Customer service quality
   2.2   Delegating work
       2.3.1   Principles of delegation
   2.3   Assessing work flow
       2.4.1. Work flow objectives
       2.4.2   Principles of work planning and time management
   2.4   Assisting colleagues
       2.5.1   Work load prioritization
   2.5   Providing inputs
   2.6   Management and staffing needs

LO3 Maintain work place Records
   3.1   Completing and submitting workplace records
       3.1.1   Staff records
       3.1.2   Regular performance reports
       3.1.3   Relevant work place
   3.2   Delegating monitoring records
LO4 Solve problems and make decisions
   4.1   Identify workplace problems
       4.1.1   Operational and customer service prospective
   4.2   Initiating short term actions to resolve problems

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4.2.1 Delegation and problem solving technique

LEARNING STRATEGIES:
- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:
- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Monitor and improve workplace operations
- Efficiency and service levels are monitored on an ongoing basis.
- Operations in the workplace support overall enterprise goals and quality assurance initiatives.
- Quality problems and issues are promptly identified and adjustments are made accordingly.
- Procedures and systems are changed in consultation with colleagues to improve efficiency and effectiveness.
- Colleagues are consulted about ways to improve efficiency and service levels

LO2 Plan and organize workflow
- Current workload of colleagues is accurately assessed.
- Work is scheduled in a manner which enhances efficiency and customer service quality.
- Work is delegated to appropriate people in accordance with principles of delegation.
- Workflow is assessed against agreed objectives and timelines.
- Colleagues are assisted in prioritisation of workload.
- Input is provided to appropriate management regarding staffing needs.

LO3 Maintain workplace records
- Workplace records are accurately completed and submitted within required timeframes.
- Where appropriate completion of records is delegated and monitored prior to submission.

LO4 Solve problems and make decisions
- Workplace problems are promptly identified and considered from an operational and customer service perspective.
- Short term action in initiated to resolve the immediate problem where appropriate.
- Problems are analysed for any long term impact and potential solutions are assessed

- and actioned in consultation with relevant colleagues.
- Where problem is raised by a team member, they are encouraged to participate in solving the problem.
- Follow up action is taken to monitor the effectiveness of solutions in the workplace.

ICT DBA3 M010 0811		Monitoring Implementation of Workplan/Activities		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	- Teacher's made handouts - Job sheet - Information sheet - Operation sheet	25	1:1
2.	Textbooks	Any relevant book	25	1:1
3.	Reference Books			1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25

B.	***Learning Facilities & Infrastructure***			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	***Consumable Materials***			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
D.	***Tools and Equipments***			
1	ISP service	Current Internet Technologies		
2	Multimedia projector	- LCD	1	Per section
3	Printer	- Capability of A3 printing - color printing capability	1	

LEARNING MODULE 11	Logo of TVET Provider
TVET PROGRAM TITLE: **Database Administration Level III**	

MODULE TITLE: **Applying Quality Control**
MODULE CODE: **ICT DBA3 M11 0811**

NOMINAL DURATION: **20 hrs**

MODULE DESCRIPTION:

This module covers the knowledge, skills and attitudes required in applying quality control on database administration.

LEARNING OUTCOMES:

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

LO1 Confirm quality standards

LO2 Assess quality of service delivered

LO3 Record information

LO4 Study causes of quality deviations

LO5 Complete documentation

MODULE CONTENTS:

LO1 Confirming quality standards
   1.1 Document quality standard procedure for hardware and network services
   1.2   Disseminate quality documents
   1.3 Introduce standard procedure
   1.4 Revise Standard Procedure

LO2 Assess quality of service delivered
   2.1 Check service delivery
        2.1.1 Check against specifications
        2.1.2 Visual inspection of final output
        2.1.3 Physical inspection of service
   2.2 Evaluating Service Delivery
        2.2.1 Standard specifications
        2.2.2 Procedures
        2.2.3 Materials
   2.3 Identify causes of any faults
   2.4 Recording basic information in the quality performance

LO3 Record information
   3.1 Recording basic information on the quality performance
   3.2 Maintaining records of work quality

LO4 Study causes of quality deviation
   4.1 Investigate causes of deviation
   4.2 Recommending suitable prevention action
        4.2.1 Materials
        4.2.2 Components
        4.2.3 Process

LO5 Complete Documentation
   5.1 Record information on quality performance
   5.2 Record all services and process

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Individual assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO1 Confirm quality standards

- Quality standard procedures document for hardware and network services are acquired and confirmed.
- Quality documents are disseminated to staff in accordance with the organization policy.
- Standard procedures are introduced and explained to organizational staff / personnel.
- Standard procedures are revised / updated when necessary

LO2 Assess quality of service delivered

- Services delivered are checked against organization quality standards and specifications
- Service delivered are evaluated using the appropriate evaluation parameters and in accordance with organization standards
- Causes of any identified faults are identified and corrective actions are taken in accordance

with organization policies and procedures

LO3 Record information

- Basic information on the quality performance is recorded in accordance with organization procedures
- Records of work quality are maintained according to the requirements of the organization

LO4 Study causes of quality deviations

- Causes of deviations from final outputs or services are investigated and reported in accordance with organization procedures
- Suitable preventive action is recommended based on organization quality standards and identified causes of deviation from specified quality standards of final service or output

LO5 Complete documentation

- Information on quality and other indicators of service performance is recorded.
- All service processes and outcomes are recorded.

LEARNING MODULE 12	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Leading Small Teams**
MODULE CODE: **ICT DBA3 M12 0811**

NOMINAL DURATION: 20 **hrs**

MODULE DESCRIPTION:

The module aims to provide the trainees with the knowledge, skills and right attitudes to lead small teams including setting and maintaining team and individual performance standards.

LEARNING OUTCOMES:

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

LO1 Provide team leadership

LO2 Assign responsibilities

LO3 Set performance expectations for team members

LO4 Supervised team performance

MODULE CONTENTS:

LO1 Providing team leadership

1. Introduction to team leadership
2. Identifying and presenting work requirements to team members
   - 2.1. Client profiles
   - 2.2. Assignment instruction
3. Communicating reasons for instructions and requirements to team members
4. Recognizing, discussing, and dealing with team members' quires(requests) and concerns

LO2 Assigning responsibilities

2.1 Allocating duties and responsibilities to team members by considering the skills, knowledge and attitude required to perform the task according to company policy

2.2 Allocating duties based on individual preference, domestic consideration

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2.3   Representing concerns of next level of management to team members and individuals

LO3 Setting performance expectations for team members

3.1   Describing performance expectations

3.2   Establishing performance expectations based on client needs and assignment requirements

3.3   Discussing and disseminating performance expectations to individual team members

LO4 Supervising team performance

4.1 Monitoring performance against defined criteria
    4.1.1   Formal and informal process

4.2 Taking corrective actions

4.3 Providing feedback (positive support and advice)on strategies to overcome deficiencies
    4.3.1   Formal and informal feedback process

4.4 Referencing performance issues which can't be addressed or solved, to responsible body

4.5 Informing team members for any changes

4.6 Monitoring team operations to ensure attainment of employer and or client needs are met

4.7 Providing follow-up announcement on all issues affecting the team

4.8 Completing relevant documentations in accordance with company procedures

LEARNING STRATEGIES:

- Lecture-discussion
- Group work
- Project work
- Workplace Assignment

ASSESSMENT METHODS:

- Interview/ Written Test
- Demonstration/Observation with Oral Questioning

ASSESSMENT CRITERIA:

LO 1 Provide team leadership

- Work requirements are identified and presented to team members
- Reasons for instructions and requirements are communicated to team members
- Team members' queries and concerns are recognized, discussed and dealt with

LO 2 Assign responsibilities

- Duties and responsibilities are allocated having regard to the skills, knowledge and aptitude required to properly undertake the assigned task and according to company policy
- Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible

LO 3 Set performance expectations for team members

- Performance expectations are established based on client needs and according to assignment requirements
- Performance expectations are based on individual team members duties and area of responsibility
- Performance expectations are discussed and disseminated to individual team members

LO 4 Supervised team performance

- Monitoring of performance takes place against defined performance criteria and/or assignment instructions and corrective action taken if required
- Team members are provided with feedback, positive support and advice on strategies to overcome any deficiencies
- Performance issues which cannot be rectified or addressed within the team are referenced to

appropriate personnel according to employer policy

- Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction
- Team operations are monitored to ensure that employer/ client needs and requirements are met
- Follow-up communication is provided all issues affecting the team
- All relevant documentation is completed in accordance with company procedures

LEARNING MODULE 13	Logo of TVET Provider

TVET PROGRAM TITLE: **Database Administration Level III**

MODULE TITLE: **Leading Workplace Communication**
MODULE CODE: **ICT DBA3 M13 0811**

NOMINAL DURATION: **20 hours**

MODULE DESCRIPTION:

The module aims to provide the trainees with the knowledge, skills and right attitudes to lead in the dissemination and discussion of information and issues in the workplace.

LEARNING OUTCOMES:

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

LO1 Communicate information about workplace processes

LO2 Lead workplace discussion

LO3 Identify and communicate issues arising in the workplace

MODULE CONTENTS:

LO1 Communicating information about workplace processes

   1.1   Introduction basic communication skill

     1.1.1   Nature of communication

           1.1.1.1 What is communication

           1.1.1.2 Social communication

1.1.1.3 Business communication

1.1.1.4 Methods of communication

1.1.1.5 Types and characteristics of communication

1.2 Selecting appropriate communication method based on work place guideline.

1.3 Communicating multiple operations involving several topics area accordingly.

1.4 Use questions to gain extra information

1.5 Identifying sources of information correctly

1.6 Organizing selected Information correctly

1.7 Verbal and written reporting is undertaken when required

1.8 Maintaining communication skills in all situations

LO2 Leading workplace discussion

2.1 Requiring and providing response to workplace issues immediately

2.2 Making Constructive contributions to workplace discussions on such issues as production, quality and safety

2.3 Communicating goals/objectives and action plan which undertakes in the workplace

LO3 Identifying and communicating issues arising in the workplace

3.1 Identifying issues and problems as they arise

3.2 Organizing coherently information regarding problems and issues to ensure clear and effective communication

3.3 Initiating dialogue with appropriate staff/personnel

3.4 Raising communication problems and issues as they arise

LEARNING STRATEGIES:

- Lecture-discussion
- Simulation
- Demonstration
- Group work
- Institutional Individual assignment
- Workplace Assignment

ASSESSMENT METHODS:

- Interview/Written Test
- Demonstration/Observation with Oral questioning

ASSESSMENT CRITERIA:
LO 1 Communicate information about workplace processes

- Appropriate communication method is selected based on work place guideline.
- Multiple operations involving several topics areas are communicated accordingly.
- Questions are used to gain extra information.
- Correct sources of information are identified.
- Information is selected and organized correctly.
- Verbal and written reporting is undertaken when required.
- Communication skills are maintained in all situations

LO 2 Lead workplace discussion

- Response to workplace issues is sought.

- Response to workplace issues are provided immediately.
- Constructive contributions are made to workplace discussions on such issues as production, quality and safety.
- Goals/objectives and action plan undertaken in the workplace are communicated.

LO 3 Identify and communicate issues arising in the workplace

- Issues and problems are identified as they arise.
- Information regarding problems and issues are organized coherently to ensure clear and effective communication.
- Dialogue is initiated with appropriate staff/personnel.
- Communication problems and issues are raised as they arise.

ICT DBA3 M011 0811		Applying Quality Control		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	TTLM	• Teacher's made handouts • Job sheet • Information sheet • Operation sheet	25	1:1
2.	Textbooks	Any relevant book	25	1:1
3.	Reference Books			1:10
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	*Learning Facilities & Infrastructure*			
1	Lecture Room	- 8x12m; equipped with IT equipment and internet		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	
4.	Locker	- wooden or metal	2	
5.	Cabinet	- metal	1	
C.	*Consumable Materials*			
1.	Blank Disk	- CD-R/RW - DVD/CDRW	5	1:4
2.	Stationery	- Whiteboard marker, printing paper, printer ink		
D.	**Tools and Equipments**			
1	Samples	• Sample of Quality control activity	7	1:25

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2	Operating systems			
3	ISP Service	• Current Internet Technologies		
7	Multimedia projector	- LCD	1	Per section
8	Printer	- Capability of A3 printing - color printing capability	1	

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
A.	*Learning Materials*			
1.	CBLM	- Trainer's made handouts	25	1:1
2.	Textbooks	If available	25	1:1
3.	Reference Books	• The Discipline of Teams: A Mindbook-Workbook for Delivering Small Group Performance Jon R. Katzenbach, Douglas K. Smith, Doug Smith • Great Business Teams: Cracking the Code for Standout Performance Howard M. Guttman • Internet • Enterprise Information Systems Assurance and System Security: Managerial and Technical Issues Merrill Warkentin (Editor), • Rayford B. Vaughn (Editor) • Practical .NET 2.0 Networking Projects Wei-Meng Lee	5	1:5
4.	Journals/Publication/ Magazines	- ICT journals(Monthly)		1:25
B.	*Learning Facilities & Infrastructure*			
1	Workshop	- 8x12m; equipped with IT		1:25
2.	Library	- Multipurpose		
3.	Shelves	- wooden or metal	5	

4	White Board	1.50 X 1.50	1	
5	Cabinet	- metal	1	
C.	*Consumable Materials*			
1	Blank Disk	- CD-R/RW	5	1:5
2	Stationery	- Whiteboard marker, printing paper, printer ink		
3	Flash disk	San disk or similar 4GB	5	1:5
D.	*Tools and Equipments*			
1	Laptop	• 80 GB, 3.4Ghz, P IV	1	
2	UPS	• 750 Volt Amper	1	
3	Divider	• American socket supporter	2	
4	Multimedia projector	- LCD	1	Per section
5	Printer	Leser Jet	1	

ICT DBA3 M013 0811		**Leading Work Place Communication**		
Item No.	**Category/Item**	**Description/ Specifications**	**Quantity**	**Recommended Ratio (Item: Trainee)**
A.	*Learning Materials*			
1.	**CBLM**	Teacher's handout	25	1:1
2	Reference Books	• The Four Conversations: Daily Communication That Gets Results **Jeffrey Ford, Laurie Ford** • Language and Communication : Essential Concepts for User Interface and Documentation Design **Agnes Kukulska-Hulme** • Success in communication **(Stuart Silars,2005)**		1:10
3	Manuals and procedures	Teacher's manuals		1:1
B.	*Learning Facilities & Infrastructure*			

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1	Workshop	- 8x12m; equipped with networked computers and Internet		1:25
2.	Shelves	- wooden or metal	5	
3	White Board	1.50 X 1.50	1	
4	Cabinet	- metal	1	
C.	***Consumable Materials***			
1	Stationery	- Whiteboard marker, printing paper, printer ink		
2	Flash disk	San disk or similar 1 or 2GB	3	1:10
D.	**Tools and Equipments**			
1	Samples	• Interview Samples • Questioner Samples • Data gathering Samples	5	1:5
2	UPS	• 750 Volt Amper	2	1:12
3	Divider	• American socket supporter	14	1:2
4	Multimedia projector	- LCD	1	1:25
5	Printer	Leaser Jet	1	

LEVEL III	Logo of TVET Provider

TVET PROGRAM TITLE: Database Administration Level III

MODULE TITLE: Improving Business Practice

MODULE CODE: ICT DBA3 M14 0811

NOMINAL DURATION: 45 **Hours**

MODULE DESCRIPTION: This unit covers the skills, knowledge and attitudes required in promoting, improving, monitoring and growing business operations. It includes diagnosing and benchmarking of business.

LEARNING OUTCOMES

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

LO1: Diagnose the business
LO2: Benchmark the business
LO3: Develop plans to improve business performance
LO4: Develop marketing and promotional plans
LO5: Develop business growth plans
LO6: Implement and monitor plans

MODULE CONTENTS
LO1: Diagnose the business (6 Hrs)
1.1 Determining and acquiring data required for diagnosis
1.2 Determining competitive advantage of the business
1.3 Undertaking SWOT analysis

LO2: Benchmark the business (5 Hrs)
2.1 Meaning of benchmarking data
2.2 Identifying sources of benchmarking data
2.3 Identifying methods of selecting benchmarking indicators
2.4 Selecting relevant key benchmarking indicators
2.5 Comparing own practice/performance and benchmarked indicators
2.6 Identifying areas of improvement

LO3: Develop plans to improve business performance (6 Hrs)
3.1. Listing required improvements for business performance
3.2 Determining cost-benefits ratios for required improvements
3.3. Determining work flow changes for required improvements
3.4 Ranking proposed improvements for business performance
3.5 Developing action plan for business improvements
3.6 Checking organizational structures for business improvements

LO4: Develop marketing and promotional plans (10 Hrs)
4.1 Reviewing practical mission and vision, objective statement
4.2 Identifying target markets
4.3 Obtaining market research data
4.4 Obtaining competitor analysis
4.5 Developing market position
4.6 Developing practical brand, labeling and packaging
4.7 Selecting and developing promotional tools

LO5: Develop business growth plans (13 Hrs)
5.1 Meaning and importance of strategic plan
5.2 Developing plans to increase yield per existing client/customer
5.3 Developing plans to add new clients/customers
5.4 Ranking/prioritizing proposed plans
5.5 Developing an action plans to implement plans
5.6 Reviewing/evaluating work practices/performance
LO6: Implement and monitor plans (5 Hrs)
6.1 Developing implementation plan
6.2 Identifying indicators of success of the plan
6.3 Monitoring implementation plan
6.4 Adjusting implementation plan

ASSESSMENT CRITERIA:
LO1. Diagnose the business
1.2 Data required for diagnosis is determined and acquired
1.3 Competitive advantage of the business is determined from the data
1.4 SWOT analysis of the data is undertaken
LO2. Benchmark the business

2.1 Sources of relevant benchmarking data are identified
2.2 Key indicators for benchmarking are selected in consultation with key stakeholders
2.3 Like indicators of own practice are compared with benchmark indicators
2.4 Areas for improvement are identified

LO3: Develop plans to improve business performance
3.1 A consolidated list of required improvements is developed
3.2 Cost-benefit ratios for required improvements are determined
3.3 Work flow changes resulting from proposed improvements are determined
3.4 Proposed improvements are ranked according to agreed criteria
3.5 An action plan to implement the top ranked improvements is developed and agreed
3.6 Organizational structures are checked to ensure they are suitable

LO4. Develop marketing and promotional plans
4.1 The practice vision statement is reviewed
4.2 Practice objectives are developed/reviewed
4.3 Target markets are identified/refined
4.4 Market research data is obtained
4.5 Competitor analysis is obtained
4.6 Market position is developed/reviewed
4.7 Practice brand is developed
4.8 Benefits of practice/practice products/services are identified
4.9 Promotion tools are selected/developed

LO5 Develop business growth plans
5.1 Identifying planning techniques
5.2 Plans to increase yield per existing client are developed
5.3 Plans to add new clients are developed
5.4 Proposed plans are ranked according to agreed criteria
5.5 An action plan to implement the top ranked plans is developed and agreed
5.6 Practice work practices are reviewed to ensure they support growth plans

LO6. Implement and monitor plans
6.1 Implementation plan is developed in consultation with all relevant stakeholders
6.2 Indicators of success of the plan are agreed
6.3 Implementation is monitored against agreed indicator
6.4 Implementation is adjusted as required

LEARNING METHODS:
- Discussion
- Demonstration
- Practical exercises
- Role playing
- Presentation
- Small group work
- Case study
- Individual assignment
- Projects and mini enterprises
- Brain storming

- guest speaker
- Games
- CD-ROMs
- Coaching/mentoring
- Company visit

MODULE ASSESSMENT:

- Written test
- Demonstration
- Interview
- Direct Observation with Oral Questioning

Context of Assessment:
Competency may be assessed in the work place or in a simulated work place setting.

Resource Requirements

Item No.	Category/Item	Description/ Specifications	Quantity	Recommended Ratio (Item: Trainee)
ICT DBA3 M14 0811 Improving Business Practice			
A.	*Learning Materials*			
1.	CBLM KAB CEFE SYB	Trainer's made handouts Trainee handbooks	25	1:1
2.	Textbooks	If available	25	1:1
3.	Reference Books	1. Hisrich, Understanding Entrepreneurship 2. Thimons, New Venture Creation 3. Gupta, Micro and Small Business Management 4. Hailay G/Tinsae:Small Business Management 5. Gilkerson, self employment from dream to reality 6. Woretaw Bezabih ,entrepreneurship(Amharic version)	5	1:5
B.	*Learning Facilities and Infrastructure*			
1	Demonstration room	8 x 12m; equipped with IT facilities	1	1:25
2.	Library	Multipurpose		
3.	Shelves	Wooden or metal	5	
4	White Board	1.50 X 1.50	1	
5	Cabinet	Metal	1	
6	Internet and Virtual library	High speed Internet Connection Recommended E-VDO, Broad Band	1	1:25
C.	*Consumable Materials*			
1	Blank CD	CD-R/RW	5	1:5
2	Stationery	Whiteboard marker, printing paper, printer ink		
3	Flash disk	San disk or similar 4GB	5	1:5

4	• Zope card • Flip chart • Marker • Scotch • Candy • Chocolate	• hard card/file/classer • local • white board and permanent(all colors)		
D.	**Tools and Equipments**			
1	Samples	• Business plan	5	1:5
2	Computer	• At least 80 GB, 3.4Ghz, P IV • With Expandability	12	1:2
3	UPS	• 750 Volt Ampere	2	
4	Divider	• American socket supporter	6	
5	Multimedia projector	LCD	1	1:25
6	Printer	Laser Jet	1	
7	Desk jet Printer	Color	1	1:25
8	Digital Camera	Digital	1	1:25
9	Scanner	Image and Text support	1	1:25
10	Laptop	Toshiba	5	1:5
11	Photo copier	Canon	1	1:25
12	Dart		5	1:5

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