KCSE Computer Studies Syllabus

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INTRODUCTION (COMPUTER STUDIES)

Computer Studies is offered as an optional subject at the secondary school level of education. The syllabus was first developed in 1996 and the subject, being very dynamic, requires that the syllabus be reviewed constantly. This edition is therefore a revision.

The Computer Studies syllabus has undergone a major review to bring it up-to-date with current trends and breakthroughs in Information and Communication Technotogy (ICT). It is the intention of this revised syllabus to be time-independent and to accommodate contemporary technology. This is clearly reflected in the objectives. The aim of the computer studies course is to equip the learner with basic skills that will enable him/her to use a computer for accomplishing day-to-day tasks at school, home and in the world of work. It is the intention of this revised syllabus to give the learner the required knowledge, skills and attitudes to enable him/her to fit and adapt to the ever- changing computer world and appreciate the computer as a tool for tackling day-to-day problems.

The syllabus has been revised to enable the learner apply skills acquired to develop themselves mentally, morally, socially and spiritually. The learner will also appreciate career opportunities that exist tn the world of computer studies and also have a firm foundation for further education and training.

Teachers are advised to use contemporary technology, materials and resources in order to expose the learner to the advancements made in the field of computer. The teacher should take particular note of new software and hardware developments and should keep themselves up-to-date with new innovations. The introduction of Internet Technology will be particularly useful as a source of information for issues such as HIV/AIDS, drug abuse, environmental issues, human rights, and integrity among others.

Time allocation per topic has been suggested. It is based on three lessons per week in forms one and two and four lessons per week in forms three and four. The teacher is advised to plan his/her work to fit the allocated time in order to cover the syllabus. In teaching the subject, a lot of creativity and innovative ideas are encouraged in-order to make the subject interesting.

GENERAL OBJECTIVES

This course will enable the learner to:

1. appreciate a computer system.

2. appreciate the technological development of computers.

3. apply basic skills in the safe use and care of a computer system.

4. develop skills to use application packages.

5. appreciate the role of computer applications in carrying out day-to-day business and organizational tasks.

6. understand the role of Information and Communication Technology in mental, moral, social and spiritual development,

7. develop abilities to interact more efficiently with the wider Community.

8. appreciate the use of programming as a tool for problem- solving

9. appreciate the impact of computer technology on society

10. acquire basic knowledge, skills and attitudes necessary for adapting to a fast changing technological world

11. develop a firm base for further education and training.

FORM I - COMPUTER STUDIES SYLLABUS

1.0.0 Introduction to Computers (18 Lessons)

2.0.0 Computer Systems (49 Lessons)

3.0.0 Operating Systems (32 Lessons)

1.0.0 INTRODUCTION TO COMPUTERS (18 LESSONS)

1.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) define a computer

b) state the different parts of a computer

c) explain how Computers have developed

d) classify the various types of computers

e) identify areas where computers are used

f) define a computer laboratory

g) state the safety precautions and practices in a computer laboratory

h) demonstrate basic hands-on skills on the use of a computer.

CONTENT:

1.2.1 Definition of a computer.

1.2.2 Parts of a computer.

1.2.3 Development of Computers

1.2.4 Classification of computers

* Physical Size
* Functionality
* Purpose

1.2.5 Areas where computers are used

1.2.6 Definition of a Computer laboratory

1.2.7 Safety precautions and practices in a computer laboratory

* Behaviour
* Handing of materials and equipment
* Fire

* Cabling
* Stable power supply
* Burglar proofing
* Ventilation
* Lab layout
* Dust/damp control
* Lighting'
* Standard furniture

1.2.8 Hands-on skills

* Start-up, restarting and shut-down (Booting)
* Keyboard layout
* Practical Keyboard and mouse skills.

2.0.0 COMPUTER SYSTEMS (49 LESSONS)

2.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) describe a computer system

b) explain the functional organization of the elements of a Computer system

c) describe input devices of a computer system

d) describe the Central Processing Unit (CPU)

e) describe the output devices of a computer system

f) describe the types of secondary storage devices and media

g) distinguish between power and interface cables

h) explain basic computer set-up and cabling

i) distinguish between system software and application software

j) evaluate the criteria for selecting a computer system.

CONTENT:

2.2.1 Description of a Computer system.

2.2.2 Functional organization of the elements of a computer System.

* Hardware
* Software
* Live-ware

2.2.3 Input devices e.g.

* Keying devices
* Pointing devices
* Scanning devices
* Speech recognition devices
* Other digital devices

2.2.4 Central Processing Unit (CPU)

* Control Unit
* Arithmetic and Logic Unit (ALU)
* Memory
* Processors
  - Types
  - clock speeds

2.2.5 Output Devices

* Soft copy output devices e.g.
  - Visual display unit –Liquid Crystal Display (LCD), flat panel, cathode ray;
  - Cathode Ray Tube (CRT)
  - Sound output
  - light emitting

- Hard copy output devices e.g
- printers (impact, non-impact)
- plotters

2.2.6 Secondary/Auxilia Storage Devices and Media

* Fixed-e.g. Hard disk
* Removable- e.g.
  - floppy disks
  - tape
  - optical disks (CD-R, WORM, CD-RW, DVDs)
  - zip disks

2.2.7 Power and Interface Cables.

* Power Cable
* Parallel Cable
* Serial Cable

2.2.8 Basic Computer Set-up and Cabling.

* Connecting basic computer components
* Connecting other computer peripherals

2.2.9 Classification of software

* Purpose

a) System software

i) firmware

ii) networking software

iii) operating 3ystem

iv) utilities

b) Application software

* Acquisition

a) standard software

b) user developed (in-house)

2.2.10 Criteria for selecting a Computer System (Specifications)

* Hardware Considerations

o Processor speed

o memory capacity

o warranty

o upgradability

o user needs

o cost

o portability

o other considerations

* Software Considerations

o authenticity

o user needs

o user friendliness Software Considerations

o system requirements

o cost

o compatibility

o portability

o documentation

other software considerations.

3.0.0 OPERATING SYSTEMS (32 LESSONS)

3.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) define an operating system

b) state the functions of an operating system

c) describe types of operating systems

d) describe how operating systems organize information

e) manage files using an operating system

f) manage disks using an operating system

g) identify internal and peripheral devices under Operating System control

h) install and configure an operating system.

3.2.1 Definition of an operating system

3.2.2 Functions of an operating system

* Job scheduling
* Resource Control
* Input/Output handling
* Memory Management
* Error handling
* Interrupt handling

3.2.3 Types of Operating Systems

* Number of users

i) single user

ii) multi user

* Number of tasks i) single tasking ii) multi tasking
* Interface

i) Command line

ii) menu driven interface

iii) Graphical User Interface (GUI)

3.2.4 Organization of Information using an Operating System

* Files

* Directories/folders

* Storage media

3.2.5 File management using an Operating system

* Description of files

* Types of files

i) system files

ii) application files

* Functions of files

i) storage of data

ii) organization of information

* Creating files

* Manipulating files

i) viewing files and directories

ii) organization of information

iii) creating files/directories

iv) opening

v) editing

vi) renaming

vii) fmding/searching

viii) sorting

ix) copying

x) moving

xi) deleting

3.2.6 Disk Management using an Operating system

* Formatting
* Partitioning
* Defragmentation
* Disk Diagnostics/Disk Compression
* Back up

3.2.7 Devices under Operating System Control

* Processor
* Memory (Ram)
* Storage devices
* Input/Output devices and ports
* Communication devices and ports

3.2.7 Installation and Configuration of an Operating system

* Trouble shooting.

FORM 2 - COMPUTER STUDIES SYLLABUS

4.1.0 Word Processors (18 Lessons)

4.2.0 Spreadsheets (18 Lessons)

4.3.0 Databases (18 Lessons)

4.4.0 Desktop Publishing (15 Lessons)

4.5.0 Internet and e-mail (14 Lessons)

5.0.0 Data Security and Controls (6 Lessons).

4.1.0 WORD PROCESSORS (18 LESSONS)

4.1.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) defme a word processor

b) state the purpose of word processing

c) use a word processing package

d) format and edit a document

e) create and edit a table

f) create and update a mail- merge document

g) print a document

h) Insert and edit objects.

CONTENT:

4.1.3 Definition of a Word- processor

4.1.4 Purpose of word processing eg

* Letter preparation
* Reports
* Newsletters

4.1.5 Using a Word processing package

* Getting started
* Screen layout
* Running the programme

i) creating a document

ii) saving

iii) retrieving

iv) closing

v) exiting

4.1.6 Editing and formatting a document

* Editing a document

* Block Options

i) selecting

ii) moving

iii) copying

iv) deleting

v) inserting and type over

* Find and Replace

i) search/find

ii) replace

* Proof-Reading

i) spelling and grammar checking

ii) thesaurus

iii) auto-correct

iv) undo and redo

* Formatting a document

a) Text formatting

i) bolding

ii) italicizing

iii) underlining

iv) fonts

v) drop caps

vi) change case

vii) superscriptlsubscript

b) Paragraph Formatting

i) alignment

ii) indenting

iii) spacing

iv) section breaks

v) bullets and numbering

c) Page Formatting

* Layout

i) columns

ii) headers/footers

* Setup

i) margins

ii) orientations

iii) paper size

iv) tabs

4.1.7 Creating and Editing a Table

* Create a table

i) rows

ii) columns

* enter data

* Editing Tables

i) resizing rows/columns

ii) inserting rows/columns

iii) deleting rows/columns

iv) merging rows/columns

v) splitting rows/columns

* Formatting tables

i) borders

ii) shading

* Table conversions

i) converting text to table

ii) converting tables to text

iii) importing

* Arithmetic calculations i) perform calculation ii) insert formulae

* Sorting

4.1.8 Sorting Creating and updating a mail merge document

* Creating main document 1) form letters

ii) labels

iii) envelopes

* Create/import data source

i) editing

ii) saving

* Merging fields

* Main and data source to i) printer or

ii) new window or

iii) fax or

iv) e-mail

* Updating merged document

4.1.9 Printing a document

* printer setup

* print preview

* print option

* Printer selection

* Orientation

* Page and copies

* Printing

4.1.10 Inserting Graphics

* Types of graphics

i) drawing

ii) pictures

ii) charts

* Inserting

i) importing

ii) drawing

* Editing graphical objects

i) updating

ii) resizing

iii) enhance

4.2.0 SPREADSHEETS (18 LESSONS)

4.2.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) define a spreadsheet

b) describe the components of a spreadsheet

c) state the application areas of a spreadsheet

d) create and edit a worksheet

e) explain different cell data types

f) apply cell referencing

g) apply functions and formulae

h) apply data management skills

i) apply charting and graphing skills

j) print worksheet and graph.

4.2.3 Definition of a Spreadsheet

4.2.4 Components of a spreadsheet

i) worksheet

ii) database

iii) graphs

4.2.5 Application areas of a spreadsheet

* Statistical analysis
* Accounting
* Data management
* Forecasting (what if analysis)
* Scientific application

4.2.6 Creating a worksheet/workbook

* Getting started
* Worksheet layout
* Running the program

Creating a worksheet

* editing a cell entity
* saving
* retrieving
* closing a worksheet exiting from spreadsheet

4.2.7 Cell Data Types

* Labels
* Values
* Formulae
* Functions

4.2.8 Cell referencing

* Cell addressing
* Absolute referencing
* Relative referencing

4.2.9 Basic functions and Formulae

* Functions

i) statistical (average, count, max, mm)

ii) logical (If, count-if, sum-it)

iii) mathematical (Sum, Product, Div)

* Arithmetic formulae (using operators +, -, /,*, brackets)

4.2.10 Worksheet formatting

* Text
* Numbers
* Rows and columns
* Global

4.2.11 Data Management

* Sorting
* Filtering
* Total/subtotals function
* Forms

4.2.12 Charts/graphs

* Types
* Data ranges
* Labels
* Headings and titles
* Legends

4.2.12 Printing

4.3.0 DATABASES (18 LESSONS)

4.3.2 Specific Objectives

By the end of the topic, the learner should be able to:

a) define a database

b) explain the concepts of database

c) explain data organization in a database

d) create a database

e) edit a database

f) design a form

g) apply basic concepts of queries

h) create report and labels

print queries, forms and reports.

4.3.4 Definition of Database

4.3.5 Database concepts

* Tinditional filing methods (manual and flat files
* Functions of databases
* Types of database models
* Database software
* Features of a database (e.g. data Structures, report generating, querry language, modules)

4.3.6 Data Organization

* Character types
* Fields
* Records
* Files
* Database

4.3.7 Creating a database

* Design a database structure
* Field properties and data types
* Key- fields and index
* Data ently

4.3.8 Editing a database

* Modify structure
* Updating database

4.3.9 Form Design

* Form Layout
* Data manipulation
* Formating fields

4.3.10 Queries

* Creating
* Updating
* Viewing
* Printing

4.3.11 Reports layout

Creating (using rational and logical operator, logical operators — AND OR, NOT)

Modifying

Sorting and grouping

Labelling

Printing

4.4.0 DESKTOP PUBLISHING (15 LESSONS)

4.4.1 Specific Objectives

By the end of the topic, the learner should be able to:

a) define desktop publishing b) state the purpose of DTP c) identify types of DTP software

d) design a publication

e) edit a publication

f) format a publication

g) print a publication.

4.4.3 Definition of Desktop publishing

4.4.4 Purpose of DTP

* Graphic design
* Page layout design
* Printing

4.4.5 Types of DTP software

* Graphical based
* Layout based

4.4.6 Designing a Publication

* Types of publication e.g. newsletters cards, bronchures, posters etc
* Running the program
* Screen layout
* Setting up a publication

* Manipulating text and graphics

4.4.7 Editing a publication

* Editing tools

4.4.8Formatting a Publication

* Text

* Graphics

4.4.9 Printing

* Page set up

* Print options

4.4.3 Definition of Desktop publishing

4.4.4 Purpose of DTP

* Graphic design

* Page layout design

* Printing

4.4.5 Types of DTP software

* Graphical based

* Layout based

4.4.6 Designing a Publication

* Types of publication e.g. newsletters cards, bronchures, posters etc

* Running the program

* Screen layout

* Setting up a publication

* Manipulating text and graphics

4.4.7 Editing a publication

* Editing tools

4.4.8Formatting a Publication

* Text
* Graphics

4.4.9 Printing

* Page set up
* Print options

4.5.3Definition of Internet

4.5.4 Development of Internet

4.5.5 Importance of Internet

4.5.6 Internet Connectivity

* Telecommunication facilities
* Modems
* Internet services providers (ISP)
* Internet software

4.5.7 Internet services e.g.

• World Wide Web (www)
• Electronic Mail (e-mail)
• Electronic Commerce (c-commerce)
• Electronic Learning (c-learning)

4.5.8 Accessing Internet

• Log-in/sign -in
• SuriYbrowse
• Search engines and hyperlinks
• Downloading/saving/printhg

4.5.9 Electronic Mail (e-mail)

* Definition

* e-mail software

* e-mail facilities

i) mails (checking, composing, forwarding, sending, saving and printing

ii) fax

iii) file attachment

iv) on-line meetings

v) telephone messages

vi) contact management

N.B Emphasis is on the procedure and not necessarily on on-line connectivity

4.5.10 Use the internet to access information on emerging issues e.g.

* HIV/AIDS

* Drug abuse

* Environmental issues

* Moral integrity .

5.0.0 DATA SECURITY AND CONTROLS (6 LESSONS)

5.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) define the terms data security and privacy.

b) identify security threats on ICT and possible control measures.

c) identify types of computer crimes

d) discuss laws governing protection of information and communication Technology systems.

5.2.1 Definition of data security and privacy

5.2.2 Security threats and control measures

* Threats e.g.

i) virus

ii) unauthored access

iii) computer errors and

accidents

iv) theft

* Control measures e.g.

i) anti-virus software

ii) password

iii) User access levels

iv) backups

5.2.3 Computer cnrnes e.g

i) trespass

ii) hacking

in) tapping

iv) cracking

v) piracy

vi) fraud

vii) sabotage

viii) alteration

* Detection and Protection e.g.

i) audit trail

ii) data encryption

in) log files

iv) firewalls

5.2.4 Laws governing protection of information systems

FORM III - COMPUTER STUDIES SYLLABUS

6.0.0 Data Representation in a computer (26 Lessons)

7.0.0 Data Processing (24 Lessons)

8.0.0 Elementary Programming Principles (38 Lessons)

9.0.0 Systems Development (44 Lessons)

6.0.0 DATA REPRESENTATION (26 Lessons)

6.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) explain concepts and reasons for data representation in a computer

b) define the terms bit, byte, nibble and word

c) explain types of data representation in the computer

d) perform binary arithmetic operations

6.2.1 Concepts and Reasons of data representation

6.2.2 Definition of terms: bit, byte, nibble and word

6.2.3 Types of data representation

* Number Systems and their representation of integral values

i) decimal

ii) binary

iii) octal

iv) hexadecimal

* Symbolic representation

i) Binary Coded Decimal code(BCD)

ii) Extended Binary Coded Decimal Interchange Code (EBCDIC)

iii) American Standard Code for Information Interchange Code (ASCII)

* Conversion between binary and decimal

6.2.4 Binary arithmetic operations

* Binary addition

* Binary subtraction

i) ones complement

ii) twos complement

7.0.0 DATA PROCESSING (24 Lessons)

7.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) define the terms data, information and data processing

b) describe data processing cycle

c) explain types of errors in data processing

d) explain the various methods of data processing

e) describe data integrity

f) describe a computer file

g) describe types of computer files

h) describe file organization methods

i)describe the various data processing modes.

7.2.1 Definition of the terms: data, information and data processing

7.2.2 Data processing cycle

* Data collection

i) stages of data collection

ii) methods of data collection

* Data input

* Processing

* Output

7.2.3 Description of errors in data processing

* Transcription errors
* Transposition

7.2.4 Data Integrity

* Accuracy
* Timeliness
* Relevance

7.2.5 Data processing methods

* Manual/conventional
* Mechanical
* Electronic

7.2.6 Computer files

* Elements of computer file
* Logical and physical files

7.2.7 Types of computer processing file

* Master
* Transaction
* Report
* Sort
* Backup
* Reference

7.2.8 File organization methods

* Sequential
* Random/direct
* Serial

* Indexed sequential

7.2.9 Electronic Data processing modes

* On-line

* Distributed

* Time-sharing

* Batch processing

* Multi-processing

* Multi-programming/multi tasking

* Interactive processing

* Real-time

8.0.0 ELEMENTARY PROGRAMMING PRINCIPLES (38 Lessons)

8.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) define Programming.

b) describe the various levels of programming languages.

c) state the advantages and disadvantages of each level of the programming language.

d) define the terms assembler, compiler, interpreter, source program and object

program.

e) describe the stages of program development.

describe the program control structures.

g) define and develop algorithm, pseudo-code and flowchart.

8.2.1 Definition of Programming

8.2.2 Levels of programming languages

* Low level language

i)machine

ii)assembly

* High Level languages

i) third Generation Languages (3GLs)

ii) four Generation Languages (4 GLs)

iii) Object Oriented Programming (OOPs)

iv) Internet (scripting) Programming Languages

8.3.3 Advantages and disadvantages of low and high level languages.

8.4.4 Description of terms

i) assembler

ii) compiler

iii) interpreter

iv) source program

v) object program

8.4.5 Program development

* Problem recognition
* Problem definition
* Program design
* Program coding
* Program testing
* Implementation

8.4.6 Program Control Structures

* Sequence
* Selection
* Iteration (looping)

8.4.7 Definition and development of Algorithm e.g.

i) pseudo-code

ii) flow chart

9.0.0 SYSTEM DEVELOPMENT (44 LESSONS)

9.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) describe a system.

b) define an information system.

c) state the purpose of an information system.

d) identify the stages of system development.

e) develop a system using a case study.

f9.2.1Description of a system.

9.2.2 Definition of an Information system.

9.2.3 Purpose of an Information System.

9.2.4 Stages of system development

* Problem recognition and definition
* Information gathering e.g.

i) investigation

ii) observation

iii) interviews

iv) questionnaires

* Requirement specification for the new system
* System design
* System construction
* System implementation
* System review and maintenance

(*A number of theories exist on system development. The above is a general guide to the stages)

9.2.5 System Documentation

* Reports on fact finding / information gathering
* System flowchart
* Table/file structure / descriptions
* Sample data
* Output reports
* User manual

write a report on the case study.

FORM IV- COMPUTER STUDIES SYLLABUS

10.0.0 Introduction to Networking and Data Communication (24 Lessons)

11.0.0 Application Areas of Information and Communication Technology (8 Lessons)

12.0.0 Impact of Information and Communication Technology on Society (8 Lessons)

13.0.0 Career Opportunities in ICT (4 Lessons)

14.0.0 Project (50 Lessons).

10.0.0 INTRODUCTION TO NETWORKING AND DATA COMMUNICATION (24 LESSONS)

10.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) define computer networking terms

b) state the purpose of computer networks

c) describe the elements of a network

d) describe various types of networks

e) describe various types of network topologies.

10.2.1 Definition of terms

i) computer network

ii) data communication

10. 2.2 Purpose and Limitations of networking

* Purpose

i) resource sharing

ii) remote communication

iii) distributed processing facilities

iv) cost effectiveness

v) reliability

* Limitations

10.2.3 Elements of Networking

a) Data communication media

* Communication with cables

i) twisted pair cables

ii) coaxial cables

iii) fibre-optic cables

* Communication without cables (wireless)

i) microwave

ii) satellite

iii) radio transmission

b) Data Signal

* Digital

* Analog

c) Communication Devices e.g.

* Modems

* Network cards

* Hubs

d) Network software

* Operating systems

* Protocols

10.2.4 Types of Networks

* Local Area Network(LAN)

* Metropolitan Area Network(MAN)

* Wide Area Network(WAN)

10.2.5 Types of Network topologies e.g.

* Star

* Bus

* Ring

11.0.0 APPLICATION AREAS OF INFORMATION AND COMMUNICATION TECHNOLOGY (8 Lessons)

11.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) describe the use of computers in different application areas

b) write a report on the use of a computer in any one of the computer application areas visited by students.

11.2.1 Application Areas of Information and Communication Technology

* Financial Systems

i) accounting

ii) banking

iii) payroll

* Retail Systems

i) point of sale systems

ii) stock control

* Reservations Systems

i) hotels

ii) air-lines

* Communication Systems

i) fax and telex

ii) radio

iii) television

iv) video conferencing

v) e-mail

vi) telecommuting

vii) internet

* Education

i) Computer Aided Learning(CAL)

ii) e-learning

iii) computer based simulation

* Industrial systems

i) simulation

ii) process control

iii) CAD (Computer Aided Design)/CAM (Computer Aided Manufacture)

* Scientific and Research Systems

i) weather forecasting

ii) medical research

iii) military/space exploration

* Transportation Systems

i) air-traffic control

ii) shipping control

iii) automobile traffic control

* Entertainment Systems

i) computers and movies

ii) multi- media

* Virtual reality

i) uses of virtual reality

ii) visor

* Library Systems

i) Library lending system

* Home use

* Health

i) Expert systems

* Offices Expert systems

* Marketing

i) e-commerce

ii) business

11.2.2 Fieldwork Report

13.0.0 CAREER OPPORTUNITIES IN ICT (4 LESSONS)

13.1.0 Specific Objectives

By the end of the topic, the learner should be able to:

a) describe career opportunities in ICT

b) identif available opportunities for further education

13.2.1 Description of careers in the field of ICT e.g.

i) Computer Operators

ii) Programmers

iii) Software Engineers

iv) Database Administrators

v) System Administrators

vi) Computer Technicians

vii) Computer Engineers

viii) Information Systems Managers

ix) Computer Trainers

x) Web Designers

xi) Web Administrators

xii) Systems Analysts

13.2.2 Identification of further Educational Opportunities

i) Colleges

ii) Institutions

iii) Polytechnics

iv) Universities

v) Research Institutions

14.0.0 PROJECT

14.1.0 Specific Objectives

By the end of the Project, the learner should be able to:

a) identify and define a problem

b) carry out fact finding through either or all of these methods

i) investigation

ii) observation

iii) interviews

iv) questionnaires

c) define system hardware and software requirements

d) design a system

e) construct a system that would:

i) input data through forms or screen

ii) update: modification, deletion of existing data

iii) carry out data validation

iv) searchlfilter/query/retrieve records

v) generate/print reports

f) test the system

g) prepare a project report

h) Documentation that includes:

i) reports on fact finding

ii) system flowchart/flow diagram

iii) table/file structure descriptions

iv) sample input and test data

v) output reports

vi) user manual