THE REPUBLIC OF UGANDA

Ministry of Education and Sports

Secondary School Curriculum

UACE SUBSIDIARY ICT TEACHING SYLLABUS

National Curriculum Development Centre

NATIONAL CURRICULUM DEVELOPMENT CENTRE (NCDC) UGANDA

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Contents

Acronyms

ALU - Arithmetic Logic Unit
ASCII - American Standard Code for Information Interchange
BIOS - Basic Input Output System
BPS - Bits Per Second
CAD/M - Computer Aided Design/ Manufacturing
CAL – Computer Aided Learning
CAT 5 - 'Category 5' cable
CD - Compact Disc
CD-R - Compact Disc Recordable
CD-ROM - Compact Disc Read Only Memory
CD-RW - Compact Disc Re-Writable
CPU – Central Processing Unit
CRT - Cathode Ray Tube
DBMS - Data Base Management System
DDR - Double Data Rate
DFD – Data Flow Diagrams
DOS – Disc Operating System
DSL - Digital Subscriber Line
DTP - Desktop publishing
DVD - Digital Versatile Disc
EFT - Electronic Funds Transfer
EULA - End User Licence Agreement
FAQ - Frequently Asked Questions
FIFO - First in First Out
FNF - First Normal Form
FTP – File Transfer Protocol
Gb – Gigabyte
GIF – Graphic Interchange Format
GIGO- Garbage In Garbage Out
GPS – Global Positioning System
GUI – Graphical User Interface
GUI – Graphical User Interface
GW – Gateway
HCI – Human Computer Interaction
HTML – Hyper Text Mark-up Language
HTTP – Hyper Text Transfer Protocol

IC – Integrated Circuit
ICT – Information and Communication Technology
IP – Internet Protocol
IRC – Internet Relay Chat
ISDN – Integrated Services Digital Network
ISP – Internet Service Provider
JPEG – Joint Photographic Experts Group
Kb – Kilobyte
KH – KiloHertz
LAN - Local area network
LCD – Liquid Crystal Display
LED – Light Emitting Diode
LIFO - Last in First Out
MAN – Metropolitan Area Network
MICR – Magnetic Ink Character Recognition
MP3 – MPEG Layer 3
NIC – Network Interface Card
NOS- Network Operating System
OCR – Optical Character Recognition
OMR - Optical Mark Recognition
OMR- Optical Mark Reader
OOPL- Object Oriented Programming Language
OSI – Open Systems Interconnection
PCI – Peripheral Component Interconnect
PDA- Personal Data Assistant
POS - Point of Sale
PPM – Pages per Minute
RAM - Random Accesses Memory
ROM - Read Only Memory.
SCSI – Small Computer Systems Interface
SQL – Structured Query Language
TCP – Transmission Control Protocol

TFTP – Trivial File Transfer Protocol

TNF – Third Normal Form

URL – Uniform Resource Locator

USB – Universal Serial Bus

VGA- Video Graphics Array

WAN - Wide Area Network

WAP – Wireless Application Protocol

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Connie Kateeba
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Foreword

This is the first time Uganda is having the subject of ICT taught at the Advanced level secondary Education. This subject is oriented towards acquisition of practical competences for the world of work. As a subsidiary subject, it gives it a wider coverage across the spectrum of subject combinations. The skills covered in this syllabus are important and relevant across subject combinations.

The syllabus has topics that are largely intended to address the skills in the ICT that every learner needs in the 21st Century. It is incumbent upon the teachers to make the teaching of the topics in this teaching syllabus as practical as possible and relevant to the world of work.

Each topic has a background and guidance to the teacher to relate it to its practical application and demystify the areas of emphasis for uniform coverage. This coupled with the learning outcome gives the teacher guidance how to structure the teaching to make it relevant to the learner being guided through the syllabus.

The teaching / learning strategies suggested in the Syllabus are just a guide to the teacher but are not meant to substitute the rich professional approaches that the teacher may opt to use to deliver knowledge, and to develop understandings, skills, values and attitudes.

Introduction

This syllabus was developed after looking at the need for ICT Knowledge and skills among learners and how these help to improve on the teaching-learning process. The education sector and the world of work require an individual to possess ICT Knowledge and skills. This is evidenced by the demand for computer literacy and computer skills for the respective job vacancies being advertised today.

This syllabus has been prepared to help the learner acquire ICT Knowledge and skills required to meet the challenges of Information and Communication Technology (ICT) applications in society. The syllabus emphasises use of practical examples whenever possible to teach ICT applications which the world of work expects a high school graduate to possess.

The Subsidiary ICT syllabus is meant to help the learner acquire skills required by end users of ICTs and which can be applied in a variety of fields.

Purpose of the Teaching Syllabus

This Subsidiary ICT Teaching Syllabus is meant to guide teachers handling Subsidiary ICT at A level. It is designed to achieve the aims of teaching Subsidiary ICT, standardise the teaching of the subject, guide the teachers of Subsidiary ICT and produce more students with skills in ICT who can effectively compete on the global market.

This Teaching Syllabus will help the teacher to cover the syllabus content adequately up to appropriate depth at each level of study. The design of this syllabus emphasises the teaching approaches to be used for each sub-topic. The number of periods allocated should also guide teachers to effectively plan to complete the syllabus within the recommended time.

Broad Aims of Education in Uganda

1. To promote understanding and appreciation of the value of national unity, patriotism and cultural heritage, with due consideration of internal relations and beneficial inter-dependence.
2. To inculcate moral, ethical and spiritual values in the individual and to develop self-discipline, integrity, tolerance and human fellowship.
3. To inculcate a sense of service, duty and leadership for participation in civic, social and national affairs through group activities in educational institutions and the community.
4. To promote scientific, technical and cultural knowledge, skills and attitudes needed to promote development.
5. To eradicate illiteracy and to equip the individual with basic skills and knowledge to exploit the environment for self-development as well as national

development, for better health, nutrition and family life, and the capacity for continued learning.

6. To contribute to the building of an integrated, self-sustaining and independent national economy.

Aims and Objectives of Secondary Education in Uganda

1. Instilling and promoting national unity, and an understanding of social and civic responsibilities; strong love and care for others, and respect for public property as well as an appreciation of international relations and beneficial international co-operation.
2. Promoting an appreciation and understanding of the cultural heritage of Uganda including languages.
3. Imparting and promoting a sense of self-discipline, ethical and spiritual values, personal responsibility and initiative.
4. Enabling individuals to acquire and develop knowledge and an understanding of emerging needs of society and the economy.
5. Providing up-to-date and comprehensive knowledge in theoretical and practical aspects of innovative production, modern management methods in the field of commerce and industry and their application in the context of social economic development of Uganda.
6. Enabling individuals to develop basic scientific, technological, agricultural, and commercial skills required for self-development.
7. Enabling individuals to develop personal skills of problem-solving, information-gathering and interpretation, independent reading and writing, self-improvement through learning and development of social, physical and leadership skills such as are obtained through games, sports, societies and clubs.
8. Laying the foundation for further education.
9. Enabling the individual to apply acquired skills in solving problems of the community.
10. Instilling positive attitudes towards productive work and strong respect for the dignity of labour and those who engage in productive labour activities.

Aims of Teaching Subsidiary ICT

Teaching Subsidiary ICT is aimed at:
1. helping the learner develop and consolidate his/her knowledge of ICT and be aware of new and emerging technologies.
2. encouraging the learner to develop as an independent user.
3. encouraging the learner to develop ICT skills to enhance their work in a variety of subject areas.
4. equipping the learner with skills for lifelong learning.

The ICT skills in the syllabus are directly applicable to the study of other subjects and schools are encouraged to provide opportunities for their learners to apply these skills to a range of learning areas (subjects).

Factors Considered while Developing the Subsidiary ICT Syllabus
The following factors were considered while developing this syllabus:
- Low levels of ICT literacy in the country

- High demand for ICT skills as a major requirement for employment
- Unequal access to basic ICT training
- Need to reduce the digital divide.

Target

The Subsidiary ICT syllabus is intended for the Subsidiary ICT Advanced Level secondary school teacher. The learner can also use the syllabus as guidance for further learning and personal development of skills emphasised therein.

Scope and Depth

It covers content for Senior Five and Senior Six. It addresses skills in Word processing, electronic spreadsheets, electronic presentation, electronic publication and Databases. It also covers the knowledge areas like computer hardware and software, data communication, system security, ICT ethical issues and emerging technologies.

Teaching Sequence

The teaching sequence should follow the order in which the topics have been arranged in this teaching syllabus.

Senior Five Term One

Topic	Sub topic
Introduction to Computing	• Introduction to Computers
	• World of ICTs
	• Implications of using ICTs (Advantages and Disadvantages)
Computer Management	• Booting process
	• File Management
	• Common Utilities
	• Print Management
Computer Laboratory Care and Maintenance	• Computer Literacy
	• Secure Laboratory Environment
	• Servicing and Maintenance
Computer Word Processing I	• Introduction to Word Processing
	• Working with Word processing software

Senior Five Term Two

Computer Hardware	• Input devices
	• Output devices
	• Storage devices
	• Processor Components

Computer software	• System Software
	• Application software
Electronic spreadsheets I	• Introduction to spreadsheets
	• Working with spreadsheets
	• Managing spreadsheets
	• Formulas and functions
Internet and World Wide Web	• Introduction to the Internet
	• Internet Services
	• World Wide Web

Senior Five Term Three

Computer Word Processing II	• Page Layout
	• Date tabulation
	• Use of objects
	• Document accuracy
	• Mail merge, document referencing and printing
Electronic Presentation	• Introduction to Electronic Presentation
	• Working with Presentation software
	• Developing a presentation
	• Charts
	• Graphical objects
	• Presentation output
	• Slide show

Senior Six Term One

Data communication and Networking	• Introduction to Data Communication
	• Introduction to Computer networks
Electronic Publication	• Introduction to Electronic Publishing
	• Publishing Basics
	• Document Layout
	• Document Enhancement
	• Outputs
	• Complete publication
	• Web Publishing

Senior Six Term Two

Electronic Spreadsheets II	• Working with Charts
	• Worksheet Page Layout
	• Printing a worksheet
Databases	• Introduction to Databases

	• Database Objects

Senior Six Term Three

System Security, ICT Ethical issues and Emerging Technologies	• Computer System Security
	• Privacy and ICT ethical Issues
	• Emerging Technologies
	• ICT industry

Time Allocation

The subject should be given6 periods per week on the school's teaching timetable. This is to allow enough time for the learners to engage in practical activities for developing hands-on skills and get exposed to real life computing experiences. The teacher is advised to give the learners as many practical sessions as time can allow to enable them develop the computing skills that this syllabus stipulates. As much as possible, the learner should be allowed to explore the ICTs exposed to him/her for the benefit of developing new skills and knowledge.

How to Use the Syllabus

This Subsidiary ICT syllabus is engineered towards developing practical skills amongst the learners. Use of experimentation and practical sessions is highly encouraged. Student research, especially with use of the Internet, is highly encouraged.

The syllabus has suggested teaching-learning approaches though they are not final. You can come up with other teaching strategies to enable you cover the content described in this syllabus. While deciding on other strategies, you should consider the following:

- Content to be covered and skills therein
- Number of learners in the class
- Learning outcomes and the competences to be developed
- Individual needs of the learners
- Time available

The teacher is not restricted to a specific operating system and its applications. You are encouraged to use any platform as long as it can enable you to achieve the stated competences. For examination purposes, you are encouraged to state the operating system and application used for proper assessment.

Syllabus Features

The Subsidiary ICT syllabus will empower learners with knowledge and skills to solve the day-to-day problems in the society using ICTs. This teaching syllabus has the following features which should be noted by the teacher.

a) **Duration**

   This gives the number of periods proposed for each topic. These are only to be used as a guide to enable the teacher cover the work adequately.

b) **Learning Outcome**

   This is a statement that specifies what the learner should have known or be able to do upon successful completion of the topic.

c) **Competences**

   These define a specific range of skills, knowledge, or ability the learner should have attained by the end of each topic. The teacher should use the competences to plan the teaching/learning strategies suitable for the lesson. Competences also guide in evaluation at the end of the learning process.

d) **Guidance to the teacher**

   This is to guide you prepare for lessons in a given topic. It spells out the areas of emphasis and tools to be used in a given topic.

e) **Teaching /Learning Strategies**

   These provide the teacher with guidance on the proposed activities and strategies that can be used in the teaching. The following are the suggested teaching /learning strategies;

   1. **Hands on activities (Practical Sessions):**The learners work in pairs or individually to develop skills or put into practice the acquired knowledge. You will need to carefully plan a range of activities that clearly identify the purpose of the practical session. Where learners work in groups, every learner should have an opportunity to take part in the hands-on activity.

   2. **Teacher guided research:** An instructional technique where you give students areas of research and as a result the learner finds out more information in the given areas.

   3. **Group Discussion and Peer presentation:** A technique where the students are divided into small manageable groups to share knowledge/ findings. Each group should be given an opportunity to present their findings to the rest of the class under your guidance.

   4. **Brainstorming:** A technique used to gather ideas about a topic or learning area spontaneously contributed by the learners.

5. **Device identification:** An approach that requires the learner to identify and distinguish between devices.

6. **Teacher exposition:** An instructional technique where you put the topic into context for the learner to elicit his/her contributions. This approach is most appropriate when introducing a new topic.

7. **Use of Simulations:** The use of computer systems (programmes) to imitate the operation of a real-world process or system.

8. **Collaborative tasks:** An approach that requires the learner to work with online groups in planning, collecting the request data and solving problems. For example discussion groups and forums.

As a teacher, you are not restricted to the suggested teaching / learning strategies. You can develop your own strategies that suit your environment and the desired learning outcome.

Mode of Assessment

The assessment in this syllabus is software independent. Any hardware platform, operating system and application packages can be used for the examination, provided they have the capabilities to enable the learner fully demonstrate all the acquired skills, and meet the assessment objectives of this syllabus.

The application software needed for this syllabus are Word processors, spreadsheets, electronic presentation, Database applications, Web browsers, and electronic publishing. Use of other operating systems other than Windows is highly encouraged.

The assessment of Subsidiary ICT at Advanced Level will be done in two ways, that is, continuous assessment and summative assessment.

Continuous Assessment

This shall be carried out by the subject teacher within the provided teaching time. It can be done in form of practical sessions, tests, class activities, oral questions, open quizzes and assignments. It is advised that assessment for knowledge objectives be done at the end of each topic.

Practical skills can be assessed by giving a series of practical sessions relevant to the topics covered to develop the learner's hands-on skills.

Summative Assessment

This shall be done at the end of the two years of Advanced Level Education. Two papers will be used to assess the subject as follows:

Subsidiary ICT Paper One: (2 $\frac{1}{2}$ hours)

This paper will be based on basic ICT concepts and their application areas. The paper will cover the entire syllabus with emphasis on application of ICT knowledge in a variety of fields. (Social, Economic, Political, Environmental, Informational)

This will be a written paper made up of 20 equally weighted compulsory questions. The duration of the examination paper will be **2 Hours 30 Minutes**

The questions shall be structured and semi-structured requiring a short response, a phrase or one or two sentences. Some of the semi-structured questions will require extended responses of about three sentences.

All questions are to be answered in the spaces provided on the examination paper**.**

This paper will be set basing on the table of specifications below.

Table of Specifications

Topic	Knowledge	Comprehension	Application	Analysis	Total
Introduction to Computers	1		1		2
Lab Care, Troubleshooting and Maintenance			1		1
File management		1	1		2
Computer Hardware	1	1		1	3
Computer Software	1	1	1		3
Internet and World Wide Web		1	2		3
Data Communication and Networking,	1	1			2
Trends in Computing	1			1	2
Applications			2		2
Total	**5**	**5**	**8**	**2**	**20**
Percentage	**25%**	**25%**	**40%**	**10%**	**100%**

Subsidiary ICT Paper Two (3 Hours)

This will be a practical paper with five compulsory equally weighted questions each carrying 20 marks. The duration of the paper shall be **3 hours**
The questions will be drawn from the topics word processing, electronic spreadsheet, electronic presentation, electronic publication and databases. The paper

will emphasise application of ICT skills in the topics mentioned. Where applicable, support files will be provided to supplement the set questions.

This paper will be based on the table of specification below.

Table of Specifications

Content Area	Knowledge	Comprehension	Application	Analysis	Evaluation	Total
Topic 3 (Word processing)	20%	30%	35%	15%	-	100%
Topic 6 (electronic Spreadsheets)	20%	30%	35%	15%	-	100%
Topic 8 (electronic Presentation)	20%	30%	35%	15%	-	100%
Topic 10 (Databases)	20%	30%	35%	15%	-	100%
Topic 11 (electronic Publication)	20%	30%	35%	15%	-	100%

Assessment Weighting

Paper one (theory paper)   40%

Paper two (Practical paper)   60%

General Guidance to the Teacher

The guidance provided in this section cuts across all topics in this syllabus.

- The teacher should define and analyse the specific tasks and skills to be learned, frequently assess student performance, and provide systematic feedback to the learner.
- Tailor the strategies and methods of instruction to provide for specific learners behaviours and learning disorders, mental retardation, physical disabilities, vision impairments, and hearing problems.
- The teacher is advised to move around the classroom and see what the students are doing.
- The teacher should encourage and practise the habit of previewing every document before printing .
- The teacher should make use of cyber or digital content to enhance learning.
- The teacher should employ the problem base learning strategy.

Topic 1: Introduction to Computing
Duration: 12 Periods

Background

The topic introduces the learner to computers, their use and implications of using them in a variety of fields. It is developed bearing in mind that most of the learners might be encountering the subject for the first time. They need to attain the background knowledge to the use of computer systems across a number of fields. The topic lays a foundation to the rest of the topics. It should be well handled to give the learners a solid foundation in the subject.

Learning Outcome

The learner should be able to describe the application of Information and Communication Technologies (ICTs) in society.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Introduction to Computers	The learner: • describes a computer. • identifies different parts of a computer and their uses. • makes a distinction between information and data. • describes the information processing cycle.	• describing computers • parts of a computer • data and information • information processing cycle	• Hands-on activities on identifying parts of a computer or device identification • Teacher guided research and peer presentations on information, data and the processing cycle
2. World of ICTs	The learner: • explains the meaning of ICTs. • Justifies the use of ICTs in society.	• Use of ICTs in; - business - education - health - security - politics and governance - art, leisure and entertainment - industrial, technical and scientific uses • searching the	• Teacher exposition on the concept of ICTs • Brainstorming on different areas where computers are used • Teacher guided research and group presentations on use of ICTs in society • Use of simulations on the use of computers in a variety of fields • Use of internet facility to research on this topic

Sub-Topic	Competences	Content	Teaching/Learning Strategies
		Internet.	
3. Implications of using ICTs	The learner: • discusses the implications of using ICTs.	• Implications of ICTs - social / Ethical - economic - political - environmental (Green Computing) - Security, reliability and resilience of computer systems	• Teacher exposition on the implications of ICTs on any of the areas • Learners brainstorm on other implication of using ICTs • Teacher guided research on implications of using ICTs • Peer/group presentation on the implication of using ICTs

Guidance to the Teacher

• You are advised to introduce the topic using real parts of a computer where possible. In the event that such objects cannot be obtained, use their images which are readily available online.

• The implications of using ICTs should clearly look at the advantages and disadvantages of using ICTs in each of the areas that have been highlighted in the table above.

• Use of ICTs in business should focus on banking, mobile money transfers and Electronic Funds Transfer (EFT).

• You are encouraged to organise learners in groups to make presentations on the implications of ICT in society.

Suggested Competences for Assessment

• Assess the learner's ability to distinguish the different parts of a computer and other ICT devices and their uses.

• Discuss the implication of using ICT in a variety of fields.

Topic 2: Computer Management
Duration: 16 Periods

Background

Interacting with computers and other ICTs for the first time is one of the most challenging tasks.

However system developers invented storage media, system administrative tools, services and programmes. Menus, graphics, commands and most interestingly voice recognition interfaces to facilitate the interaction and dialog between the system and the user.

It is important that the learner is introduced to the general operating system environment, common files and folders plus their management, and basic utilities.

Learning Outcome

The learner should be able to demonstrate that he can efficiently manage files.

Sub-Topic	Competences	Content	Teaching/ Learning Strategies
1. Booting Process	The learner: • describes the booting process. • identifies types of booting. • explains the concept of a computer programme. • explains various ways of starting a programme.	• Booting of a computer • Computer programme	• Demonstrating the booting processes • Discussing the concept of a computer programme
2. File Management	The learner: • defines a folder. • creates a folder on a storage medium of a computer. • moves a folder to a desired location. • deletes a folder. • defines a file. • creates a file. • identifies file	• Folders • Files • Desktop	• Demonstrating the creation and management of a file and a folder • Discussing the types of files • Demonstrating how to customise a Desktop

Sub-Topic	Competences	Content	Teaching/ Learning Strategies
	types. • saves a file in a desired location. • uses folders and sub folders to effectively categorise files. • describe how to customise the Desktop. • explains the major icons on the desktop.		
3. Common Utilities	The learner: • defines a utility programme. • lists Utility programmes (search utility, File compression utility, Disk defragmenter, Antivirus). • uses search tools to locate files or folders. • compresses and decompresses a folder. • defragments a storage medium. • defines an anti-virus programme. • identifies anti-virus programmes. • uses anti-virus programme.	• Utility programs	• Describing the concept a utility programme • Demonstrating the use of the search utility • Demonstrating the use of the file compression utility • Demonstrating the use of the disk defragmenter • Demonstrating the use of an anti-virus programme

Sub-Topic	Competences	Content	Teaching/ Learning Strategies
4. Print Management	The learner: • selects a printer. • prints a document.	• Printing	• Demonstrating the concept of print management

Guidance to the Teacher
- Demonstrate to the learners and allow them time to individually practise how to boot a computer and safely shut it down, customise a desktop, adjust settings to user preferences, create and delete directories using the GUI.
- Use of Ms DOS is not expected in this topic.

Suggested Competences for Assessment
Assess the learner's ability to customise the user desktop, create, delete a directory; locate a file or folder in a given directory.

Topic 3: Computer Laboratory Care and Maintenance

Duration: 16 Periods

Background

The use of ICTs has a number of challenges for example, computers malfunction, laptops break down, servers go offline, networks become unavailable and computers slowdown with time, etc. All of these problems can be minimised by keeping up with regularly scheduled preventive maintenance activities.

It is important for every user to have an idea on basic preventive maintenance in order to maintain the equipment in a good running condition. This topic will equip the learner with skills to maintain his/her computer systems in a good running condition and the safety measures to observe when working in a computer laboratory.

Learning Outcomes

The learner should be able to:

- take care of computer systems.
- maintain (service) computer systems.
- Troubleshoot malfunctioning computer systems and restore them to a good running condition.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Computer Literacy	The learner: • describes the booting process of a computer system. • explains the meaning of computer literacy. • starts computer systems. • opens application programs.	• The booting process • Meaning of computer literacy • System start up • Locating and opening applications	• Brainstorming on protective measures in the laboratory • Hands-on activities on starting computer systems and programs • Teacher guided research and presentations on booting process
2. Secure Lab Environment	The learner: • identifies areas of lab security. • adheres to safe use of	• Areas of laboratory security:	• Teacher exposition on security of a laboratory • Brain storming on areas of

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	the computer laboratory.	- Physical security - Electric power security - Security cameras - First Aid Boxes - Fire extinguisher - Air conditioning • Safe use of the laboratory	lab security • Teacher guided research on areas of lab security • Device identification of some equipment involved in lab security
	• prepares laboratory rules and regulations.	• Laboratory rules and regulations	
3. Servicing and Maintenance of Computer Systems	The learner: • explains the importance of servicing and maintaining a computer. • installs system and application software. • uninstalls software. • carries out troubleshooting on computers.(startup errors, hanging applications and warm booting).	• Importance of servicing and maintaining a computer • Cleaning of computers • Updating of software • Upgrading software • Software installation • Fine-tuning the system	• Brainstorming on the importance of servicing and maintenance of a computer • Teacher demonstration on installation of system and application software • Hands-on activity on installation and fine tuning of computer system • Brainstorming during installation process • Identification of executable files

Guidance to the Teacher

• Provide some few computers where the learner can practise how to install and uninstall software on computer systems. This should be done for both application software and system software.

- Guide the learner to identify and correct simple practical problems encountered when using a computer. For example, simple troubleshooting software failures, boot failure, identifying loose power connection and many more.

- Where the word lab or laboratory has been used, it is exclusively referring to the computer laboratory.

Suggested Competences for Assessment

Assess the learner's ability to install application and system software; take care of a computer system and use it safely.

Topic 4: Computer Word Processing
Duration: 12 Periods

Background

Computer word processing encom*p*asses production of professional looking documents like letters, memos and circulars. In a typical office where many documents are typeset, formatting and editing of such documents becomes a nightmare where manual modes of document production, filing and transmission are used.

In order to minimise and eliminate such hassles, several electronic devices and services by computerised systems and electronic typewriters have been developed for more efficiency and effectiveness in document production.

Computerised word processing systems have got easy to use document edit and format features capable of making documents look more and more business like if well mastered. Some people and organisations earn their living by producing documents for others using computerised systems.

Therefore, it is important that our learners are introduced to the basic practical knowledge and skills of word processing in order to be able to produce, and communicate documents better.

Learning Outcome

The learners should be able to demonstrate basic knowledge and skills in document production.

Sub-Topic	Competences	Content	Learning/Teaching Strategies
1. Introduction to Word Processing	The learner: • defines the concept of word processing. • describes various examples of Word processors (MS Word, AbiWord, openoffice.org writer, La Tex editor and LyX). • opens a word processor. • identifies basic features of a word processor.	• Word processing	• Demonstrating the concept of word processing. • Discussing the concept of word processing. • Demonstrating the opening of a word processor and related features.

Sub-Topic	Competences	Content	Learning/Teaching Strategies
2. Working with Word Processing Software	The learner: • creates a new document • identifies different word document templates • shows knowledge of using inbuilt word document templates. • uses inbuilt word document templates • names and saves a file in a given location • identifies features of word processor interface • typesets content in a new document. • shows basic skills of using word processor edit features • formats a document • imports text and clips and other images from digital sources, files or websites. • manipulates imported text, and images by resizing, cropping and maintaining aspect ratio.	• New document • Word processor interface features • Document creation • Document editing • Document formatting • External data	• Demonstrating the creation of a word document • Demonstrating the opening and closing of a word document • Demonstrating the formatting of word processing • Demonstrating the importation of external data into a word processor

Guidance to the Teacher
- Although you are at liberty to decide on the word processor to use, make sure it has all the features required by this syllabus.
- Provide time for your learners to practise and develop skills in printing a variety of styles.
- Word processed documents involving equations should be considered to allow use of the equation editor.

- Proofreading a document includes consistent line spacing, consistent character spacing, re-pagination, removing blank pages, removing widows/ orphan tables and lists split over columns or pages.

Suggested Competences for Assessment
- Assess the learner's ability to identify, open and close a word processing software on computer systems.
- Choose appropriate word processing software basing on the features for a given task

Topic 5: Computer Hardware
Duration: 16 Periods

Background

A computer is made up of hardware and software. An analogy can be made to humans that the hardware is your body and the software is your mind. It is important to recognise that the way humanity is comprised of both the physical and mental, a computer is nothing without both hardware and software.

Hardware is any physical part of the computer that you can touch, see and pick up. Webster's dictionary defines hardware as 'major items of equipment or their components used for a particular purpose'. Some examples of hardware include the monitor, keyboard, mouse, disk drives, printer, scanner and speakers.

Learning Outcome

The learner should be able to use and describe the functions of common hardware devices.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Input Devices	The learner: • identifies the basic input devices. • distinguishes between input devices by their characteristics and functionality .	• Input devices such as digital cameras, barcode readers, Keyboards, mouse, microphones, scanners, touchpad and joysticks • Characteristics and functionality of input devices.	• Brainstorming and identifying/naming available input devices • Hands-on activities on how to use various input devices and determine their characteristics • Teacher guided research on the characteristics and functionalities of input devices

2. Output Devices	The learner:
	• identifies different output devices
	• distinguishes between output devices by their characteristics and functionality
	• identifies the different peripheral device interfaces
		• Output devices such as visual display units, printers, Analog devices for speech generation and speakers
		
		• peripheral device interfaces
		  - universal serial bus (usb)
		  - serial
		  - parallel
			• Brainstorming and identifying/naming available output devices
			• Hands-on activities on how to use various output devices, and determining their characteristics
			• Teacher guided research on the characteristics and functionalities of output devices

3. Storage Devices	The learner:
	• categorises secondary storage devices.
	• uses secondary storage devices.
	• explains the characteristics of storage devices.
	
	• identifies the primary storage devices.
		• Types of secondary storage devices
		  - magnetic
		  - solid state and
		  - optical devices
		• Characteristics of storage devices
		  - storage capacity (speed, bits, bytes...)
		  - transfer rate
		  - access time
		  - methods of access
		• Primary storage devices
		  - Memory Chips
			• Brainstorming and identifying/naming available secondary storage devices
			• Hands-on activities, on how to use storage devices
			• Teacher guided research on the characteristics and functionalities of the storage devices
			• Teacher exposition, on the primary storage, it use and devices used for primary storage

4. Processor Components	The learner: • appreciates the parts of the central processing unit(CPU) and their functions. • describes the types of processors in computers and other electronic devices	• Control unit • Arithmetic logic unit (ALU) • Registers • Processors	• Teacher exposition, on the parts of the CPU and their functions • Teacher guided research on the types of processors

Guidance to the Teacher

- You need to have the necessary hardware components that are relevant to the topic so that the learner can see and use them. Where the hardware is not available, appropriate images can be used. Use of real objects should take the first priority.

Topic 6: Computer Software
Duration: 08 Periods

Background

As mentioned in Topic 5 (Computer Hardware), computer software is compared to your mind. Each and everything that happens inside the computer is controlled by some form of software: from the high level word processors, games and other applications, to the low-level device drivers that tell your hardware exactly what it has to do to make them work properly.

Software is a collection of computer programmes and related data that provides instructions to computer hardware. It is these instructions which tell the hardware that it needs to print a document or save a file or display a webpage etc.

Learning Outcome

The learner should be able to describe the major categories of software and their functions.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. System Software	The learner: • identifies different types of system software. • describes the functions of operating systems.	• Types of software e.g. operating systems, utilities and programming languages • Functions of operating systems	• Brainstorming on the system software • Teacher exposition on the types and functions of software • Teacher guided research and peer presentations on other system software
2. Application Software	The learner: • identifies different types of Application Software. • explains the uses of different Application software.	• Types of Application software • Uses of Application software	• Brain storming on Application software • Teacher exposition on the types and function of Application software • Teacher guided research and Peer presentations on other Application software

Guidance to the Teacher

- There is need to have a variety of application and systems programmes for practice. You are advised to create an activity that introduces the learner to the distinction between system software and application software.

- Application software is designed to help the user to perform specific tasks while system software is responsible for managing and controlling computer hardware so that application software can.......

- Using a variety of files with different file types, create an activity that requires a learner to determine the appropriate application software to use for each of the files.

Suggested Competences for Assessment

Assess the learner's ability to determine the appropriate application software for each of the files and the skill to navigate and use the different application software.

Topic 7: Electronic Spreadsheets I

Duration: 20 Periods

Background

Throughout the ages, people have always needed to calculate. Tools such as the abacus were invented by the early Chinese to help keep track of large numbers. About thirty years ago, students only had pen, paper, slide rules and mathematical tables to help them in their mathematics exams. There were no such things as calculators and certainly no personal computers. Calculators eventually became everyday tools and certainly helped to speed up calculations and improve accuracy. Even then, they weren't really good enough to solve complex problems or deal with large amounts of repetitive work. With advancement in technology, spreadsheets were developed.

A spreadsheet is a piece of software which is used to work out calculations. Spreadsheets can do a lot more than simply adding up a column of numbers. Spreadsheets can handle financial calculations for a large business, calculate probability or other statistical information, do complex trigonometry and make colorful graphs and charts. Some examples of these spreadsheets include, Microsoft Excel, VisiCalc, Lotus 1-2-3, MS-DOS spreadsheets and OpenOffice.org Calc.

Learning Outcome

The learner should be able to produce mark sheets, budgets, class planners and many others.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Introduction to Spreadsheets	The learner: • describes a spreadsheet. • identifies some of the available spreadsheets. • identifies features of a spreadsheets. • identifies uses of a spreadsheets. • performs data entry in a worksheet. • renames, inserts and deletes worksheets. • saves a workbook.	• Meaning of a Spreadsheet • Types of spreadsheets • Features of a spreadsheet • Application areas for spreadsheets • Working with spreadsheets	• Describing the concept of a spreadsheet • Demonstrating the concept of a spreadsheet • Describing the application areas of spreadsheets • Demonstrating how to enter and insert data • Demonstrating how to rename, insert and delete a worksheet • Demonstrating how to save a workbook

Sub-Topic	Competences	Content	Teaching/Learning Strategies
2. Managing Worksheets	• The learner: • inserts rows, columns, and cells in a worksheet. • edits cell content. • selects adjacent or non adjacent range of cells or the entire worksheet. • copies and moves cell contents. • uses the auto fill tool/ copy handle tool. • freezes/unfreezes panes. • formats a worksheet (adjusting column widths, row heights, applying borders and formatting cell content).	• Inserting rows, columns and cells • Editing contents of a cell • Selecting cells • Copying the contents of a cell range, or worksheet between worksheets or workbooks • Auto fill/ copy handle tool • Freezing panes • Formatting a worksheet	• Demonstrating how to insert, edit, select, copy and move cell content in a worksheet • Demonstrating how to copy and paste cell contents • Demonstrating how to use copy handle tool • Demonstrating how to freeze/unfreeze panes • Demonstrating how to format worksheets in a variety of ways
3. Formulae and Functions	The learner: • identifies operators used in spreadsheets. • identifies different types of cell references. • uses formula to manipulate data. • uses function to manipulate data.	• Types of operators • Types of cell referencing • Formula • Functions (sum, average, Max, Min, Lookup, Count, Mode,	• Demonstrating how to use operators to form basic formulae (addition, subtraction, division, multiplication) • Demonstrating how to write formulae and to use functions • Demonstrating how to use operators, cell references, formulae and

Sub-Topic	Competences	Content	Teaching/Learning Strategies
		Median, Frequency and Var) • Error alerts	functions • Discussing the error alerts associated with use of formulae
	• identifies standard error values associated with using formulae.		

Guidance to the Teacher
- Demonstrate to the learner how worksheets are managed before allowing them time to manage their own worksheets.
- Give a clear explanation of the underlying principles of working with specific functions to the learners before they form functions or formulae. For example when a label appears in a logic function, the label is put in double quotation marks.
- Start with the basic formulae that can assist to make a shopping list budget before introducing the functions and order of operations in formulae. Automatic recalculation is expected.

Suggested Competences for Assessment
Assess the learners' ability to manage the worksheet to meet user specifications/requirements, and use of formulae and functions in worksheets.

Topic 8: Internet and World Wide Web
Duration: 12 Periods

Background

The number of users of the internet is exponentially growing due to increasing ease of use, low cost of the hardware and availability of adequate facilities in schools, public libraries, internet cafes etc.

Although the basic use of internet was research, the number of users of e-mail has outgrown that of research. One can use the internet to communicate with anyone else online, in any place in the world without incurring any extra cost. It can also be used to join mailing list, bulletin boards or discussion groups that cover a huge variety of subjects.

Learning Outcome

The learner should be able to use the Internet to communicate and enhance research in order to develop the lifelong learning skill.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Introduction to the Internet	The learner: • explains the Internet. • states the advantages and disadvantages of using the Internet.	• Meaning of the Internet • Implications of the Internet	• Explaining the meaning of the Internet • Discussing the advantages and disadvantages of using the Internet
2. Internet Services	The learner: • identifies the different Internet communication services. • uses email to communicate uses internet facility for research. • explains the concept of Netiquette	• Internet communication services • Email Services • Netiquette	• Demonstrating Internet services • Discussing the concept of Netiquette
3. World Wide Web	The learner: • defines a web browser • identifies different web browsers. • defines a search	• Web browsers • Search engines	• Demonstrating how to use the web browser to connect to the internet • Demonstrating how to use the internet to search for

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	engine.	• Websites	different information
	• identifies different search engines.		
	• searches for information from the Web.		
	• uses search engine syntax.		
	• defines a website.		
	• identifies different types of websites.		
	• explains the concept of cloud computing.	• Cloud Computing	

Guidance to the Teacher
- Guide the learners to identify the different internet services and their usefulness.
- Demonstrate effective use of search engines and give learners activities to practise use of refined searches as individuals or in groups.
- Guide the learners to use email communication. You need to make sure that all learners in the class have working email addresses for effective teaching of this topic. Creating an email address is expected.
- As much as possible encourage internet etiquette practices.

Suggested Competences for Assessment
Assess the learner's ability to search for information from the internet and use email communication in addition to other services covered in this topic.

Topic 9: Computer Word Processing II
Duration: 20 Periods

Background

In computer word processing we looked at the different word processing software and how they can be used to prepare documents. In different professions, institutions or organisations, some documents need to have specific features (look and fill) with relevant images, illustrations and tabulated data.

In word processing II, you will learn how to prepare and email documents with different specifications in mind.

Learning Outcomes

The learner should be able to:

   i)   prepare documents with tabulated data and objects with varied document layout

   ii) prepare documents using mail merge features of word processing software.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Page Layout	The learner: • adjusts document page setup for margins, orientation and columns. • uses different document view features. • inserts page numbers, page and section breaks, themes and effects.	• Page setup	• Demonstrating how to prepare page setup
2. Data Tabulation	The learner: • demonstrates, inserts drawing a table in a document. • formats table cells by cell merging, resizing and splitting. • inserts rows and columns.	• Tables	• Demonstrating table creation methods and approaches.

	• navigates table cells, enters and manipulates text in the table.		
3. Use of other Software Objects	The learner: • inserts and manipulates text box, lines and colour fill. • uses the character map. • uses basic lines, shapes, arrows and flow charts. • groups and ungroups objects.	• Text box • Word processor objects	• Demonstrating the use of software objects. • Demonstrating the formatting of software objects
4. Document Accuracy	The learner: • uses extra document edit features (spell checker, insert comment, track changes, Thesaurus, and synonyms).	• Text editing	• Demonstrating the use of document edit features
5. Mail Merge, Document Referencing, and Printing	The learner: • links content through mail merge, table of contents and hyperlink. • uses document and text referencing through footnotes and end notes. • prints out typeset text and documents.	• Mail merge • Document and content referencing • Printing	• Demonstrating the use of mail merge, document referencing and printing options

Guidance to the Teacher
- You are advised to give the learner an activity or set of activities to develop skills in word processing. Use of track changes accepting and rejecting changes is expected. You are advised to introduce each skill at a time to allow time for effective acquisition.
- Use of short cuts to navigate through a big document is encouraged
- Image positioning should be practised with different text wrappings.

Suggested Competences for Assessment

Assess the learner's ability to adjust page layout, check document accuracy, insert and use objects in word processed documents, use mail merge feature of the word processing software.

Topic 10: Electronic Presentation
Duration: 32 Periods

Background

Communicating effectively to a big audience is a challenge to many people. . It should be noted however that versatility of ICTs has played a big role in enhancing the ease and impact of the presentation process.

A presentation programme is supposed to help both the presenter with a range of tools to clearly structure his ideas and offer the participants with multimodal information that is engaging. There are many areas where presentations are used. Some of these include professional (work-related), education, entertainment, and for general communication. Presentation programmes can either supplement or replace the use of older visual aid technology, such as pamphlets, handouts, chalkboards, flip charts, posters, slides and overhead transparencies.

There are a number of presentation software such as Microsoft power point, open office presentation, lotus freelance, Corel presentation among others. Text, audio, graphics, movies and other objects are positioned on individual pages or slides in a given presentation. The "slide" analogy used in presentation software is a reference to the slide projector, a device that has become somewhat obsolete due to the use of better technologies.

Slides can be printed, or (more usually) displayed on-screen and navigated through at the command of the presenter. Transitions between slides and animation in each slide can be done in a variety of ways. Coming up with a good presentation requires a lot of input—planning, collecting information and constructing.

Learning Outcome

The learner should be able to create and deliver a multimedia presentation.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Introduction to Electronic Presentation	The learner: • explains a presentation • identifies examples of presentation software. • explains functions of a presentation software. • identifies principles of a good presentation. • identifies features of a presentation interface.	• Meaning of presentation • Examples of presentation software • Functions of presentation software • purpose of a presentation • Features of a	• Describing the concept of presentation software • Demonstrating the concept of a presentation software • Brainstorming on the purpose of a presentation • Brainstorming on the

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	• explains the application areas of presentation.	presentation software interface • Application areas of a presentation	factors that affect a good presentation
2. Working with Presentation Software	The learner: • creates presentations based on different appropriate templates. • saves a presentation to a location in different formats.	• Presentation Software	• Describing the examples of presentation software • demonstrating the opening and closing of Presentation Software • Demonstrating the creation of slides in a presentation • Demonstrating saving presentations in different formats
3. Developing a Presentation	The learner: • uses different presentation views: - normal view - slide sorter view - slide show view • changes between presentation views. • inserts slides in a presentation. • chooses most appropriate slide layout. • changes background on specific/ all slides. • copies, moves slide(s) within presentation or between presentations. • deletes slides. • inserts footer on specific slides, all	• Presentation views • Slides design • Slide master	• Demonstrating different views of a presentation • Discussing the best practices in creating a presentation • Demonstrating formatting of a slide

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	slides in presentation. • edits slides through slide master. • sets automatic slide numbering, automatic dates, non-updating dates into footer of slide master.		
4. Charts	The learner: • creates a chart from data entered within a slide in a presentation. • imports data from other applications such as spreadsheets to create charts . • imports charts from some applications. • identifies chart types of a presentation software. • inserts an organisation chart. • modifies an organisation chart.	• Charts • Chart types • Organisation charts	• Demonstrating the creation of charts using different methods in a presentation • Discussing the chart types in a presentation • Collecting data on the organisation structure of a school • Adding an organisation chart in a slide of a presentation using the data collected

Sub-Topic	Competences	Content	Teaching/Learning Strategies
5. Graphical Objects	The learner: • identifies different types of graphics (ClipArt, picture, auto shapes) that can be used in presentation software. • inserts the different types of graphics on a slide. • manipulates the position and size of the graphic to requirements. • applies shape effects on graphics on the slide. • inserts text box on a slide. • organises graphics on a slide.	• Graphics	• Making a collection of the different types of graphics • Describing the different types of graphics that can be used in a presentation • Demonstrating how to insert a graphic on a slide • Demonstrating how to manipulate graphics on the slide
6. Presentation Output	The learner: • defines transitional effects. • shows knowledge of using transitional effects. • shows knowledge of using animation effects. • adds presenter notes on a slide. • creates links between slides and other files. • re-arrange slides. • identifies output formats of a presentation.	• Transitional effects • Animation effects • Presenter notes • Navigation • Output format of a presentation	• Demonstrating transitional effects • Demonstrating various animation schemes • Discussing the purpose of transitional and animation effects • Demonstrating how to add presenter notes • Discussing different output formats of a presentation • Demonstrating use of links between slides • Demonstrating proofreading for spell-check and grammar

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	• checks spelling. • saves a presentation in appropriate output formats. • chooses printer options.	• Print a presentation	• Demonstrating the printing options of a presentation
7. Slide Show	The learner: • sets up a slide show to run manually or automatically. • runs a slide show from current slide.	• Slide show	• Demonstrating how to set up a slide show

Guidance to the Teacher
- Introduced to a class presentation project from the beginning and continue working on the project as the topic progresses
- Emphasise correct use of images and text (font size and style) depending on the end users for whom the presentation is intended. The font size and type of images meant for a presentation to children is different from the presentation to adults.
- You should prepare presentations for learners to critique and generate ideas on what a good presentation should be with reasons.
- You are advised to use demonstrations for each of the skills being introduced, give learners an opportunity to observe, and allow them to practise and develop the skills individually or in groups if the equipment allow. As much as possible, give each learner a chance to develop the skills in the topic.
- Give assignments where learners prepare and deliver presentations to the rest of the class so that they can develop confidence in delivering a presentation.

Suggested Competences for Assessment
Assess the learner's ability to create an informative presentation, deliver a presentation to an audience and customise a presentation to meet end user needs.

Topic 11: Data Communication and Networking
Duration: 18 Periods

Background

Communication is one of the fundamental aspects of life. In this regard, electronic communication means have been developed on top of the traditional manual and mechanical modes of communication for individuals and organisations to communicate more effectively. A person can now communicate through contemporary media like mobile phones and over the internet.

It is therefore important that learners are introduced to basic data communication and ICT networking infrastructure and services in order to come to terms with contemporary data communication facilities.

Learning Outcome

The learner should develop basic skills, knowledge and expertise in the use of contemporary communication facilities like computers, mobile telephones, Internet among others

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Introduction to Data Communication	• The learner: • defines data communication. • explains the elements of data communication (sender, receiver, messages, transmission media and protocol). • defines data communication tools. • describes types of electronic data communication tools like computers, mobile phones, internet among others.	• Data communication • Elements of data communication • Data communication tools • Data transmission media	• Demonstrating data communication • Discussing the concept of data communication

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	• compares electronic and manual data communication tools (manual drums, bells and messengers). • defines data transmission media. • differentiates between physical transmission media and wireless transmission media (Bluetooth and broadcast radio transmission media). • describes services offered by data Communication tools like E-mail, Skype, News groups, and instant messaging. • explains the implications of using data communication services.	• Data communication services	
2. Introduction to Computer Networks	The learner: • defines a computer network. • explains the	• Computer networks	• Demonstrating computer network • Discussing the concept

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	basic requirements for setting up a computer network (Routers, transmission media, modems and network software like windows internet explorer. • explains the implications of computer networks. • identifies different types of computer networks (• LAN, MAN, WAN). • explains the Network models (Client-server, and Peer-to-peer).	• Computer network models	of computer networks

Guidance to the Teacher
- It is important for the learners to interact with all the data communication tools mentioned in this topic for them to appreciate and clearly make a distinction between their usage.
- You are advised to use physical network devices as visual aids for the learners to visualise and learn from.
- Prepare activities that allow learners to work individually or in groups to identify and list the components of a computer network and their uses, to identify and list the implications of a computer network.

Suggested Competences for Assessment

Assess the learner's ability to effectively communicate using data communication tools and explain the types of computer networks.

Topic 12: Electronic Publication

Duration: 32 Periods

Background

Electronic publishing has a history of being used to describe the development of new forms of production, distribution, and user interaction in regard to computer-based production of text and other interactive media.

Electronic Publishing enables professional designers to create sophisticated documents that contain text graphics and many colours. It is ideal for the production of high quality colour documents such as text books, corporate newsletters, marketing literature (adverts), product catalogues and annual reports, and being able to share them over the internet.

Learning Outcome

The learner should be able to design a brochure, business card, flyer or banner for a given function.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Introduction to Electronic Publishing	The learner: • defines electronic publishing. • identifies different types of electronic publishing software. • identifies features of electronic publishing software. • identifies uses of electronic publishing.	• Meaning of electronic publishing • Examples of electronic publishing software • Features of electronic publishing software • Application areas for electronic publishing	• Analysing the concept of a Electronic Publishing • Listing different types of Electronic Publishing software • Brainstorming on features of electronic Publishing Software
2. Publishing Basics	The learner: • creates a new document. • adjusts measurement units (inches, pixels, points, centimeters). • save a new document. • typesets text.	• New document	• Demonstrating the creation of a new document • Typesetting text in a document • Presenting a document to peers

Sub-Topic	Competences	Content	Teaching/Learning Strategies
3. Document Enhancement	The learner: • changes Background colour. • inserts text boxes. • inserts Graphics. • inserts page borders. • formats text. • imports text. • adds page numbers • checks spelling. • changes spacing.	• Object properties	• Manipulating e-publisher object properties • Researching on different object properties, use them and present findings to peers
4. Document Layout	The learner: • aligns a document. • distributes Graphics in a document. • organises text along objects. • customises page size.	• Layout	• Developing a sample publication like a certificate • Presenting to peers the document
5. Advanced Features	The learner: • customises templates. • uses templates. • uses Auto Shapes. • completes document (certificates, brochures, flyers, menus and so on).	• Templates • Auto shapes • Designs	• Demonstrating application of templates in electronic publishing • Designing a complete publication project • Presenting the project to peers

Guidance to the Teacher
- For each of the items to be developed in this topic, let the learners develop, make a presentation of their designed item for the rest of the class to comment and make improvements in the item. Where possible, get a third party to determine what they need in order to advertise a product.
- Discourage the learners from using inbuilt templates while designing each of the items.

- Train learners how to adjust the units of measurement from inches, to pixels and to centimetres for learners to develop this competence.
- You are advised to organise the teaching in form of a project to allow the learner develop specific skills at a time.
- As much as possible demonstrate to learners and allow them time to develop the skills in their own through the project work.

Suggested Competences for Assessment

Assess the learner's ability to create and design an electronic publication in form of a flyer or banner to a level of advertising an item.

Topic 13: Electronic Spreadsheets II
Duration: 18 Periods

Background

In electronic spreadsheet I, we looked at the introduction, working with spreadsheets and managing worksheets. We also looked at the formulas and functions which help in the manipulation of data. We are now primed with the task of presenting the information. We have to look at the appearance of our spreadsheet i.e. text attributes, cell, column, and row attributes plus the general page layout.

Some spreadsheets can become very big and complex, especially the ones which are used to keep track of records over time. Most people find a large table of data hard to analyse, that is to say it is almost impossible to tell at a glance what is happening over a long period of time. For example, by simply looking at results sheets of a given school, it is not easy to tell the trend in performance of UNEB exams over a given period. Graphs and charts make it easier for us to analyse and understand the patterns in data.

In this section we address formatting worksheets, working with charts, and preparing outputs

Learning Outcome

The learner should be able to produce a student performance analysis report and prepare it for printing.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Working with Charts	The learner: • creates a chart. • inserts chart titles. • inserts legends. • inserts backgrounds. • inserts segment labels. • resizes the chart. • edit the data range. • selects the appropriate chart for a given set of data.	• Charts • Data types (trends, linear, composite) • Chart selection criteria	• Demonstrating how to create different charts • Demonstrating how to insert legends, backgrounds and segment labels • Demonstrating how to edit charts • Exploring chart types vis-à-vis data
2. Worksheet Page Layout	The learner: • adjusts margins • determines the appropriate page orientation	• Page Setup	• Demonstrating how to adjust and change a worksheet Page layout • Guided discovery on

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	• changes page orientation. • inserts headers. • inserts footers. • inserts page numbers. • inserts, date and time. • selects the appropriate paper size.		page orientation and use of headers and footers
3. Printing a Worksheet	The learner: • previews a worksheet. • highlights a range to print or prints the entire worksheet.	• Printing • Worksheet preview	• Demonstrating how to print a worksheet

Guidance to the Teacher
- Demonstrate to the learners how to create and manipulate charts form a worksheet, adjusting the orientation and use of other objects like dates, page numbers, headers and footers. Give learners an activity that requires them to use the skills demonstrated in an assignment. It is important the assignment is done in individual basis.
- Put emphasis on printing to make sure that the learner is able to print only the required number of pages. This will only be achieved through practice.

Suggested Competences for Assessment
Assess the learner's ability to create and edit, and interpret charts from data in a spreadsheet.

Topic 14: Databases

Duration: 32 Periods

Background

Think of an address book you might buy in a bookshop. In it, you will write all your important contacts; friends, family, relatives, companies, and other people in your circles. The address book contains all names, addresses, location, phone numbers and whatever you need to contact anyone at any time.

The world generates an enormous amount of data from almost every aspect of life; school records, credit cards, store merchandise, telephone systems, web sites, among others. Some time ago, manual effort was used to track and report this information. Today, database management systems manage this information.

Learning Outcome

The learner should be able to create and query a simple database.

Sub-Topic	Competences	Content	Learning/Teaching Strategies
1.Introduction to Databases	The learner: • defines a database. • identifies examples of Database Management Systems. • describes features of Database Management System interface. • creates a database. • saves a database.	• Meaning of a database • Examples of Database Management Systems • Features of Database Management System interface • Database	• Describing the concept of a database • Demonstrating the concept of a database
2. Database Objects	The learner: • creates a table in a database. • modifies a table in a database. • creates forms in a database. • uses forms to insert records. • uses forms to modify records.	• Tables in database • Forms in database	• Demonstrating the creation of a database table • Discussing the structure of the created database tables • Making a database project

Sub-Topic	Competences	Content	Learning/Teaching Strategies
	• generates queries in a database. • creates database reports. • modifies database reports. • prints database reports.	• Queries in database • Database reports • Printing a database deport	

Guidance to the Teacher
- You are advised to use the Ms Access or any other database management system that uses a GUI. No knowledge of sql commands is expected.
- Using demonstration, guide the learner to take note of the procedures of creating and saving a relational database.
- Group the learners or give them individual activities to enable them develop hands-on skills to create databases with appropriate relations, identify features of database development software and their uses.
- Demonstrate to the learners the process of adding fields, field names, and specifying data types for a database.
- Assess the learners' correct use of database terms, create and query databases to form reports.
- Where possible prepare a project activity for learners to keep adding on to their skills as they progress with the topic.

Suggested Competences for Assessment
Assess the learner's ability to create and query the database using a low end database management system.

Topic 15: System Security, ICT Ethical Issues and Emerging Technologies

Duration: 24 Periods

Background

As computers get involved in almost all aspects of our lives, there are quite a number of issues emerging that need extra attention. Such emerging issues range from computer system features, environmental concerns, legal and ethical issues, system security and users of computer applications. Therefore it is increasingly becoming important that students of ICTs learn how to safeguard their computer systems, uphold ethical values while using ICT systems as they explore emerging technologies.

Learning Outcome

The learner should be able to explain and discuss the emerging issues, computer security and Privacy issues.

Sub-Topic	Competences	Content	Teaching/Learning Strategies
1. Computer System Security	The learner: • explains the various forms of Computer security (data and physical security). • identifies security threats (hardware and software). • explains the meaning of a computer virus. • explains how viruses are spread on standalone and networked computers. • explains the concept of hacking. • explains how denial of service attacks, backdoors,	• Computer security • Internet and network attacks	• Describing the concept of computer system security • Discussing the possible threats to computer systems • Discussing the available control measures to computer system attacks • Describing the concept of computer crime

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	spoofing are carried out. • identifies appropriate ways of protecting data in computer systems. • identifies types of computer crimes	• Data protection in computer systems • Computer crime	
2. Privacy and ICT Ethical Issues	• The Learner : • defines ethical issues in ICT. • describes ethical issues in ICT. • describes information accuracy. • explains the concept of intellectual property rights. • explains the concept of green computing. • explains the concept of information privacy • explains the different aspects of Information privacy and violation.	• ICT Ethics and society • Intellectual property • Information privacy	• Describing the concept of privacy and ICT ethical issues • Describing the concept of information privacy and violation
3. Emerging Technologies	The learner: • explains the concept of emerging technologies(Artificial Intelligence,	• Emerging technologies	• Describing the concept of emerging technologies • Discussing the application areas of

Sub-Topic	Competences	Content	Teaching/Learning Strategies
	Digital forensics among others). • explains how specific technologies are applied in problem solving in society. • explains advantages and disadvantages.	• Application areas of specific emerging technologies • Implications of emerging technologies	emerging technologies in society • Discussing the implications of the emerging technologies
4. ICT Industry	The learner: • explains the meaning of careers in the ICT industry. • appreciates careers in the ICT industry. • identifies the potential of ICTs for earning.	• Careers in the ICT industry • ICT in SMEs	• Discussing careers in the ICT industry • Brainstorming on opportunities on earning with ICTs

Guidance to the Teacher
• For each of the subtopics in this topic, you are advised to emphasise use teacher guided research, peer presentation and discussion methods. Prepare a set of questions that require the learner research and make a presentation of findings to the rest of the class. The presentations should give facts and defend those facts using examples where possible.

• Allow learner to be active and lead their own learning. Let your comments come in at the last point to clarify where consensus cannot be reached.

Suggested Competences for Assessment

Assess the learners' ability to articulate issues of emerging technologies and their implications to society. The learners' personal interpretation and contribution should be emphasised in view of the issue under discussion.

References

ECDL/ICDL Syllabus V5.0

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Annex 1: Basic Requirements for Teaching Subsidiary ICT

The Subsidiary ICT syllabus is a practical subject. It therefore requires both the student and teacher to have all the necessary equipment in order to have the syllabus properly implemented. For a school to teach and successfully implement the A Level Subsidiary ICT curriculum, and for the students to attain and achieve the expected skills and competences in as stipulated in the syllabus, the following basic or minimum requirements need to be instituted in the computer Lab and / or in classroom, and have them accessible to both learners and teachers.

1. Desktop personal computers or Laptops (for students' and Teachers' use)
   - Intel Pentium 4 (2.0 GHz+) or AMD Processor (1.5GHz+)
   - 512 MB Ram
   - 80 GB HDD
   - DVD/CD-RW, Combo Drive
   - 17"/19 CRT Monitor
   - Computer speakers /Keyboard/Mouse
2. A closed and simple Computer Network with at least one Network hub
3. Fire extinguisher
4. Safe electrical installation (Provide a socket for each computer set)
5. Uninterruptible power supply (UPS) units
6. Internet connectivity
7. Printer accessible on a network

It is important to keep the ratio of Computers to students as low as possible (recommended to this subject is a ratio of 1computer:2learners per stream) if learners are to have access and good practice in the subject.