ZIMBABWE SCHOOL EXAMINATIONS COUNCIL

For Performance Measurement

ZIMBABWE GENERAL CERTIFICATE OF EDUCATION (ZGCE)

Ordinary Level Syllabus

COMPUTER STUDIES (7014)
(EXAMINATION PERIOD 2014 to 2017)

***Available in the November Examinations only and not available to private candidates.**

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1.0   PREAMBLE

This syllabus is designed to provide a two year course of study which will culminate in the O level examination. It provides a foundation for the A level Computing course and alternative specialised training for learners who wish to pursue a career in Information and Communication Technology (ICT). The syllabus aims to equip learners with knowledge, develop skills of information processing and the broad range of its applications. It also intends to equip learners with the general understanding of how information processing systems are designed to suit particular applications and how such systems work. The syllabus concentrates on the principles of information processing so that, although learners will study contemporary hardware, software and applications as examples, they should be well equipped so as to appreciate future developments in ICT and its applications. The syllabus also intends to make all learners well conversant with database, word processing, spreadsheet and presentation packages.

2.0   AIMS
The syllabus aims to enable learners to:

2.1   gain an understanding of information processing applications and methods
2.2   develop a systematic approach to problem solving in a computing context
2.3   acquire practical skills and experience in ICT
2.4   gain a broad understanding of the subject which is satisfactory in itself and also as a basis for further study
2.5   develop interest, enjoyment and confidence in the daily use of computers and
2.6   appreciate the use of ICT in solving real life problems

3.0   ASSESSMENT OBJECTIVES

3.1   Knowledge and Understanding

Learners should be able to:

3.1.1 describe a range of information processing applications
3.1.2 explain the effects of introducing information processing systems both to individuals and to the organisations and
3.1.3 explain the functions of individual hardware and software components of ICT systems and their interrelationships

3.2   Problem Solving

Learners should be able to:
3.2.1 use computers sensibly to generate, implement and document solutions appropriately
3.2.2 demonstrate knowledge and understanding of the techniques used to solve ICT problems and

3.3.3 analyse ICT applications in terms of data flow and system requirements

3.3   Practical Skills

Learners should be able to:

3.3.1 demonstrate proficiency in the creation, design and implementation of documents using prescribed application packages
3.3.2 generate solutions using ICT technologies and
3.3.3 conduct research using the internet

4.0   ASSESSMENT

4.1   Specification Grid

Paper 1

Section	Weighting (%)
Computer architecture and software	15
Applications of computers and their social and economic implications	35
Systems analysis and design	15
Algorithm design and programming concepts	20
Communication and networks	10
Application packages	5
TOTAL	**100**

Paper 2

Section	Weighting (%)
Computer architecture and software	15
Applications of computers and their social and economic implications	40
Systems analysis and design	15
Algorithm design and programming concepts	20
Communication and networks	10
TOTAL	**100**

Paper 3

Section	Weighting (%)
Word-processing	30
Spreadsheet	30
Database	25
Presentation	15
TOTAL	**100**

In **Paper 1** and **Paper 2** the weighting of questions based on skills will be as follows:

Skill	Assessment Objective	Weighting (%)
Knowledge and Understanding	3.1	75
Problem Solving	3.2	25
TOTAL		**100**

4.2 Scheme of Assessment

The subject will be examined in 3 papers.

Paper	Type of Paper	Duration	Weighting%
1	Multiple Choice	1 hour	20
2	Structured	2 ½ hours	40
3	Practical Examination	3 hours	20
	Practical Coursework	5 terms	20
	TOTAL		**100**

4.3 Paper Descriptions

Paper 1: Theory (40 marks)

The paper consists of 40 compulsory multiple choice items.

Paper 2: Theory (100 marks)

The paper consists of 10 – 12 structured questions and the candidates are required to answer **ALL** questions in spaces provided. Questions will be set from **ALL** sections of the syllabus except **Section 6**.

Paper 3: Practical (100 marks)

The paper comprises Word processing, Spreadsheet, Database and Presentation consisting of **FOUR** compulsory practical questions, **ONE** question from each package.

5.0 GRADE DESCRIPTORS

The scheme of assessment is intended to encourage positive achievement by all learners. Grade descriptors are therefore provided for pass grades A, B and C to give a general indication of the standards of achievement expected of learners awarded particular grades. The descriptors must be interpreted in relation to the content specified by the Computer Studies syllabus but are not designed to define that content. The grade awarded will depend in practice on the extent to which the learner has met the overall assessment objectives.

Grade	Descriptors
A	1. Describe and explain the basic components of a computer system, their functions and usage. 2. Use specified packages proficiently including ability to import and export documents or files between applications. 3. Manage files proficiently including sorting, searching and folder creation. 4. Demonstrate a thorough understanding of a range of applications of computers and their implications on individuals, organisations and society in general. 5. Analyse problems of a given system and suggest their appropriate solutions. 6. Formulate appropriate solutions to identified problems. 7. Evaluate a given problem solution. 8. Demonstrate a thorough understanding of the contents and use of system documentation. 9. Design and dry run algorithms. 10. Demonstrate an in depth understanding of the use of computers in communication and the role played by networks in enhancing communication.

	11. Install software proficiently. 12. Analyse all the stages of systems development life cycle. 13. Use the printer proficiently. .

Grade	Descriptors
B	1. Describe the basic components of the computer system. 2. Use specified packages including ability to import and export documents or files between applications. 3. Manage files. 4. Demonstrate an understanding of a range of applications of computers and their implications on individuals, organisations and society in general. 5. Explain problems of a given system and suggest their appropriate solutions. 6. Formulate solutions to identified problems. 7. Analyse a given problem solution. 8. Understand the contents and use of system documentation. 9. Dry run algorithms. 10. Demonstrate an understanding of the use of computers in communication and the role played by networks in enhancing communication. 11. Install software. 12. Explain all the stages of systems development life cycle. 13. Use the printer.
C	1. Identify basic components of the computer system. 2. Use specified packages. 3. Demonstrate basic file management skills. 4. Identify a range of applications of computers and their social and economic implications. 5. Identify problems of a given system and suggest their appropriate solutions. 6. Explain a given problem solution. 7. Identify the contents of system documentation. 8. Understand the basic use of computers in communication and the role played by networks in enhancing communication. 9. Install software. 10. List all the stages of systems development life cycle. 11. Use the printer.

6.0   METHODOLOGY AND TIME ALLOCATION

6.1   Methodology

To achieve the stated aims and objectives, the following approaches are recommended:
- Question and answer
- Demonstrations
- Group discussions
- Field trips
- Research and Presentations
- Individual work
- Expert guest presentations
- Case studies

6.2   Time Allocation

The subject should be allocated at least **6** periods of **35 – 40 minutes** per week.

7.0   PRESENTATION OF SYLLABUS SECTIONS

The syllabus consists of **six** sections as follows:

7.1   Computer architecture and software

7.2   Applications of computers and their social and economic implications

7.3   Systems analysis and design

7.4   Algorithm design and programming concepts

7.5   Communication and networks

7.6   Application packages

8.0 SECTION 1: COMPUTER ARCHITECTURE AND SOFTWARE

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

8.1 Types of computers and their categories	• identify the categories of computers and their characteristics
	• identify the use of microprocessors in objects used in everyday life such as cameras and cars
	• classify computer systems according to their processing power
	• list the advantages and disadvantages of each category of computers
		• Computer types such as
		  - microcomputer
		  - minicomputer
		  - mainframe computer
		  - super computer
		  - embedded systems
		  - Personal Computer/desktop computers
		  - laptops
		  - notebooks, palmtops and PDAs
			• Discussing different categories and characteristics of computer systems including embedded systems
			• Listing the advantages and disadvantages of the different computer categories
			• Tabulating computer systems according to processing power
			• Classifying computer systems according to size, processing speed, power and usage

8.2 Hardware	• define computer hardware
	• identify the internal components of a computer
	• explain the functions of various internal computer components
		• Computer hardware
		• Internal components and their functions:
		  - computer system block diagram
		  - central processing unit (CPU)
		  - buses
		  - memory
		  - fans
			• Identifying computer hardware components
			• Discussing and naming internal components of a computer such as data buses, main memory, fans and CPU

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

8.3 Input devices	• identify various input devices, their characteristics and uses
	• choose appropriate input devices for a given application
	• list the advantages and disadvantages of the various input devices
		• Input devices: uses, characteristics, application, advantages and disadvantages
		  ▪ keyboard
		  ▪ mouse
		  ▪ scanners
		    - barcode readers
		    - hand-held scanners
		    - flatbed
		  ▪ joystick
		  ▪ touch pads
		  ▪ document readers
		    - MICR
		    - OCR
		    - OMR
		  ▪ webcam
		  ▪ digital camera
		  ▪ microphone
		  ▪ data loggers
		  ▪ sensors
		    - temperature sensor
		    - pressure sensor
		    - light sensor
		    - sound sensor
		    - humidity/moisture sensor
		    - proximity sensor
		  ▪ touch screen
		  ▪ stylus
		  ▪ light pen
		  ▪ magnetic stripe readers
		  ▪ smartcard reader
		  ▪ chip and pin readers
			• Categorising input devices
			• Labelling input devices
			• Discussing characteristics and classes of input devices

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes
8.4 Storage devices	• identify different storage devices • compare different storage devices	• Storage devices - hard disk - CDs - DVDs - magnetic tapes - external hard drives - memory cards - memory sticks/flash disks - floppy disks	• Describing storage devices • Discussing characteristics and classes of storage devices and media • Saving and retrieving documents using internal and external storage media • Identifying the various drives used in conjunction with the various storage media
	• compare storage devices according to capacity	• Storage units - bits - bytes - kilobytes - megabytes - gigabytes - terabytes	• Categorising storage units according to capacity

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

8.5 Output devices	• identify various output devices and their uses
	• list the advantages and disadvantages of various output devices
	• choose appropriate output devices for a given application
	• classify printers
		• Output devices
		  ▪ monitors/VDUs
		    - LCD
		    - CRT
		    - plasma
		  ▪ printers:
		    o impact
		      - dot matrix
		      - chain printer
		      - daisy wheel printer
		      - drum printer
		
		    o non-impact
		      - inkjet
		      - laser printer
		      - thermal printer
		  ▪ braille printer
		  ▪ plotters
		  ▪ speakers
		  ▪ multimedia projectors
		  ▪ control devices
		    - actuators
		    - motors
		    - buzzers
		    - lights
		    - heaters
			• Categorising output devices
			• Labelling output devices
			• Discussing characteristics and classes of output devices and media
			• Demonstrating the use of output devices
			• Categorising printers according to their operation such as speed, noise or type

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes
8.6 File organisation	• explain file access methods • compare different file access and storage methods • choose an appropriate file access/storage method for a particular application • describe file maintenance routines	• File access and storage methods - random/direct - sequential - serial - indexed sequential • File maintenance routines - updates - additions - insertions - deletions	• Discussing file access/storage methods and maintenance routines • Listing the advantages and disadvantages of each file access/storage method
8.7 Data types	• identify data types and the need for their use	• Data types - numbers - characters - strings - arrays	• Discussing the different data types
8.8 Data representation and binary arithmetic	• perform basic binary operations	• Basic binary operations using up to 8 bits - additions - subtraction - denary/binary conversion	• Discussing binary operations such as adding, subtracting and converting binary numbers to denary and vice versa
8.9 Logic gates	• identify logic gates by symbols or truth tables • construct truth tables	• Logic gates types - AND gate - OR gate - NOR gate - NOT gate - NAND gate • Truth tables - AND truth table - OR truth table - NOR truth table - NOT truth table - NAND truth table	• Drawing logic gates and constructing the truth tables using up to two inputs

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Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

8.10 Software	• define software terms
	
	• classify software by function and purpose
	
	• compare user interfaces
	
	• state operating system functions
	
	• install software
		• Software terms
		
		• Systems software
		  - operating system
		  - utility programs
		• Application software
		  - general purpose/off the shelf
		  - bespoke/ tailor made
		• User interfaces
		  - GUI/WIMP
		  - menu driven
		  - command driven
		• Operating environment management
		  - multitasking
		  - multiprogramming
		• Resource management
		  - hardware
		  - memory
		  - utility software
			• Discussing classes of software and their functions/purpose
			• Identifying software packages
			
			• Comparing user interfaces
			
			• Tabulating software functions and purpose
			
			• Setting up printer, applications and operating system software

8.11 Types of systems	• describe different types of systems
	• outline advantages and disadvantages of different types of systems
	• identify application areas of different types of systems
	• list the characteristics of different types of systems
		• System types
		  - batch processing
		  - single user online/ real time
		  - network
		  - control
		  - automated
		  - multimedia
			• Discussing different systems
			• Conducting field trips to appreciate the use of various systems

9.0 SECTION 2: APPLICATION OF COMPUTERS AND THEIR SOCIAL AND ECONOMIC IMPLICATIONS

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

9.1 Commercial and general data processing	• explain the use of computer systems in general data processing	• Banking systems
		• Institutional administration
		  - hospitals
		  - schools
		  - universities
		• Automatic stock control
		• Order processing
			• Discussing applications in general data processing
			• Conducting field trips to have an appreciation of commercial and general data processing systems

9.2 Industrial, technical and scientific uses	• explain the use of computer systems in industry, science and technology	• Applications
		  - weather forecasting
		  - Computer Aided Manufacture (CAM)
		  - Computer Aided Design (CAD)
		  - simulation and modelling
		  - virtual reality
		  - image processing
		  - industrial inspection systems
			• Listing uses in industry, science and technology
			• Conducting field trips to appreciate industrial, technical and scientific uses

9.3 Monitoring and control systems	• identify the hardware used in control systems
	• explain control system processes
	• list advantages and disadvantages of control systems
	• identify the application areas of control systems
		• Control systems and their hardware
		  - monitoring hospital patients
		  - chemical process control
		  - traffic survey and control
		  - greenhouse process control systems
		  - irrigation control systems
			• Researching application areas in monitoring and control systems
			• Conducting field trips to have an appreciation of monitoring and control systems

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

9.4 Automation and robotics	• explain the use of computer systems in automation and robotics	• Domestic equipment
		  - microwave ovens
		  - refrigerators
		  - cameras
		  - air conditioners
		  - water heating systems
		• Industrial robots
		• Data loggers
		• Automatic fuel injection
		• Closed Circuit Television (CCTV)
			• Discussing application in automation and robotics
			• Conducting field trips to appreciate computer uses in automation and robotics

9.5 Expert systems and artificial intelligence	• identify the features of expert systems and artificial intelligence and their purpose
	• explain use of expert systems and artificial intelligence
	• describe areas of application of expert systems and artificial intelligence
		• Expert system types
		  - mineral prospecting
		  - medical diagnostics
		  - speech recognition
			• Explaining application of expert systems and artificial intelligence
			• Conducting field trips to understand the use of expert systems and artificial intelligence

9.6 Other application areas	• describe the use of computer systems in other areas	• Computer applications
		  ▪ e-learning such as computer aided learning, web based learning
		  ▪ e-marking
		  ▪ e-registration
		  ▪ application in music
		    - playing music
		    - composing music
		• Computer graphics animation
		  - film
		  - cartoons
		  - adverts
			• Discussing in groups and presenting on applications of computers in other areas
			• Conducting field trips to appreciate the use of computers in other application areas

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes
9.7 IT Personnel	• describe the roles of different IT personnel	• IT personnel - data capture clerk - database administrator - hardware technician - network technician - network administrator - systems analyst - programmer - IT manager	• Listing the roles of different IT personnel • Conducting field trips to appreciate the different roles of IT personnel in industry and commerce
9.8 Social and economic effects of computers on • Individuals • Organisations • Society in general	• explain the social and economic effects of computers on individuals, organizations and society	• Social and economic effects - de-skilling - electronic scabbing - new production methods, products and services - health and safety - changes in working environment - unemployment - retraining	• Researching and reporting the social and economic effects of computers on individuals, organisations, and society
9.9 Privacy, data integrity and ethics	• explain measures to maintain privacy and integrity of data in organizations • outline ethical practices in the use of organizations' ICT resources	• Data security - data protection measures • Data integrity - data validation - data verification • Ethical use of ICT resources	• Discussing measures to maintain privacy and integrity of data • Discussing ethical practices in the use of ICT resources
9.10 Data protection legislation	• interpret the Data Protection laws	• Data Protection Laws	• Discussing the Data Protection laws in Zimbabwe

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes
9.11 System security and reliability	• explain the consequences of system failure • outline general requirements for security and reliability of data	• Consequences of system failure • System security and reliability	• Conducting a case study on system security and data recovery • Discussing consequences of system failure • Demonstrating data recovery methods

9.12 Computer crime	• describe forms of computer crime
	
	• describe measures against computer crime
		• Computer crimes
		  - hacking
		  - software piracy
		  - computer fraud
		• Security measures
		  - physical security
		  - security codes
		  - encryption of sensitive data
		  - biometrics
		  - monitoring of system usage
			• Discussing forms of computer crime
			• Conducting case studies on computer crime
			
			• Brainstorming on measures against computer crime
			• Conducting field trips to observe security measures in place for data protection

9.13 Computer malware	• describe the behaviour of computer viruses, Trojan horses and worms
	• explain effects of viruses, Trojan horses and worms
	• recommend suitable control measures
		• Computer viruses, Trojan horses and worms
		  - transmission modes
		  - effects
		  - control measures
			• Discussing forms of computer malware and effects
			• Giving examples of viruses, Trojan horses and worms
			• Conducting case studies on control measures against computer malware

10.0 SECTION 3: SYSTEMS ANALYSIS AND DESIGN

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes
10.1 Systems development life cycle (Generic model)	• list the stages in the systems development life cycle	• Stages in the Generic model	• Stating the stages involved in system development • Drawing the stages involved in system development
10.2 Problem identification	• identify problems of the existing system	• Existing system problems	• Stating the activities under problem identification • Conducting case studies on problem identification
10.3 Fact finding	• describe various data collection methods • explain advantages and disadvantages of the various methods of data collection • choose appropriate data collection methods for a given situation	• Data collection methods - questionnaires - interviews - observation - record inspection - automatic data collection	• Describing methods used in fact finding • Conducting case studies on fact finding • Tabulating the advantages and disadvantages of each fact finding technique
10.4 Feasibility Study	• describe the activities involved in a feasibility study • carry out a feasibility study • interpret the results of a feasibility study	• Feasibility study aspects - technical - social - economic - operational - legal	• Conducting feasibility studies

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes
10.5　Analysis	• describe the activities involved in the analysis stage • carry out a system analysis • interpret outcomes of the analysis stage	• Analysis tools 　-　decision tree 　-　decision table • Alternative solutions • Specification requirements • document • Cost-benefit analysis	• Explaining the activities involved in systems analysis • Conducting small scale case studies on analysis
10.6　Design	• describe the activities involved in the design stage • construct system flow charts and algorithms • choose appropriate validation rules and verification methods • design file structures and tables	• Hardware and software requirements • User interface design • system flow charts and /or pseudo codes • Validation rules and verification methods • File structures and tables • Algorithms or program flow charts • Testing strategy/plan	• Illustrating design tools • Stating the activities in the design phase • Conducting case studies on design stage • Designing a testing strategy/plan
10.7　Development and testing	• explain activities involved in the development and testing stage • outline various testing strategies	• System modules • Testing strategies 　-　standard data 　-　abnormal data 　-　extreme data	• Describing the development and testing phase
10.8　Documentation and user-training	• describe the types of documentation and their contents • justify the need for user and technical documentation as well as user training	• User documentation • Technical documentation • User training	• Listing contents of user and technical documentation • Conducting case studies on documentation and user-training

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

10.9 Implementation, evaluation and maintenance	• describe the activities involved in the implementation, evaluation and maintenance stages
	• compare different implementation methods
	• outline system evaluation techniques
	• justify the need for system maintenance
		• Implementation methods
		  - abrupt/immediate changeover/parallel changeover
		  phased/partial changeover
		  pilot changeover
		• System evaluation techniques
		• Hardware and software updates
		• System maintenance
			• Discussing implementation methods, evaluation techniques and the need for system maintenance

11.0 *SECTION 4:* ALGORITHM DESIGN AND PROGRAMMING CONCEPTS

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes
11.1 Algorithm tools	• break down a major problem into sub-problems • illustrate top-down design approach	• Structure diagram • Flow charts • Top- down design	• Breaking down the problems into modules • Illustrating top down design using practical examples

11.2 Pseudo code structures	• identify pseudo code structures
	• design pseudo codes using control structures
	• compare and contrast pseudo code structures
		• Sequence structure
		• Repetition/iteration/loop
		  - Repeat ... Until
		  - Do...While...End While
		  - For ... Next for
		• Selection
		  - Case... End Case
		  - If ...Then ...End If
			• Explaining pseudo code structures
			• Constructing pseudo codes

11.3 Interpreting and testing algorithms	• interpret algorithms • dry run algorithms using trace tables • deduce the purpose of the algorithm from the outputs	• Purpose of algorithms • Purpose of variables used • Naming of variables • Trace tables • Use of suitable test data • Dry running • Identification of errors	• Determining an output of an algorithm given a set of test data • Designing trace tables • Interpreting the purpose of designed algorithms

11.4 Programming language concepts	• define programming terms
	• name different types of programming languages
	• identify programming language generations
	• state advantages and disadvantages of program translators
	• explain syntax and semantic errors
		• Program
		• Programming languages
		  - low level
		  - high level
		• Programming language generations
		• Program translators
		  - interpreters
		  - compilers
		• Program errors
		  - syntax errors
		  - semantic and run-time errors
			• Identifying different types of programming languages
			• Explaining the terms of the programming languages.
			
			• Describing programming language platforms

12.0 *SECTION 5:* **COMMUNICATION AND NETWORKS**

Topic	Objectives **Learners should be able to**	Content	Suggested Learning Activities and Notes

12.1 Networks	• explain network types and protocols
	• compare different types of networks
		- Networks: LAN(wired), WLAN, WAN, MAN, PAN
		• Network protocols
		  - http
		  - ftp
		  - telnet
		  - VoIP
			• Modelling LAN,WAN, WLAN and PAN
			• Visiting network sites
			• Discussing network protocols

12.2 Network topologies	• explain network topologies
	• draw network topologies
	
	• list the advantages and disadvantages of network topologies
		• Network topologies:
		  - star
		  - ring
		  - bus
		  - mesh
		• Advantages and disadvantages of network topologies
			• Discussing network topologies
			• Illustrating network topologies
			
			• Discussing the advantages and disadvantages of network topologies

12.3 The Internet	• define internet and related terms
	• explain internet connection requirements
	• list advantages and disadvantages of the internet
	
	• differentiate between internet and extranet
	• describe internet services
		• Internet
		  - web browser
		  - URL
		  - home page
		  - web page
		  - website
		  - search engines
		• Internet connection requirements
		• Intranet and extranet
		• Internet services
			• Discussing internet usage
			• Stating requirements of the internet connection
			• Describing the internet, extranet, intranet and websites
			
			• Browsing and searching the internet

12.4 Mobile technology	• Identify types of mobile technology
	• describe the roles of mobile technology in communication
		• Technology types
		  - mobile phones
		  - satellite
		  - PDAs
		  - tablets
			• Engaging in field trips such as visits to technological centres and IT expos
			• Researching and reporting on the use of mobile technology in communication

13.0 SECTION 6: APPLICATION PACKAGES

12.5 Topic	Objectives Learners should be able to	Content	Suggested Learning Activities and Notes
13.1 Word Processing			

13.1.1 Introduction to word processing	• explain the features of a word processor
	• state the advantages and disadvantages of a word processor
	• list word processor examples
		• Word processor
		• Word processor features
		  - word wrap
		  - widow/orphan
		  - soft return/ hard return
		  - pagination
		  - hard space/ soft space
		  - drop cap
		• Word processor examples
			• Describing the word processor environment
			• Listing advantages and disadvantages of word processors
			• Identifying uses of word processors
			• Typing text which encompasses all letters on the keyboard

13.1.2 Document creation	• use the keyboard and mouse • type documents • save documents • retrieve documents	• Keyboard and mouse • Typing procedures • Saving procedures • Retrieving procedures	• Identifying keyboard keys and their functions • Discussing keyboard use • Opening documents • Saving documents

13.1.3 Text formatting	• format text	• Text formats
		  - bold
		  - italic
		  - underline
		  - subscript
		  - superscript
		  - borders
		  - changing text colour
		  - font size changing
		  - font type changing
			• Discussing text formatting procedures
			• Typing a short paragraph and formatting text

13.1.4 Paragraph formatting	• format paragraphs	• Paragraph formats
		  - justification
		  - line spacing
		  - drop cap
		  - indentation
		  - columns
		  - tabulation
		  - bullets and numbering
			• Explaining the concepts of paragraph formatting
			• Discussing areas of application of various paragraph formats
			• Typing and effecting paragraph formatting

Topic	Objectives Learners should be able to	Content	Suggested Learning Activities and Notes

13.1.5 Page formatting	•
	• format document pages
		• Page formats
		  - page layout
		  - watermarks
		  - headers and footers
		  - page numbering and styles
		  - margins
		  - borders
			• Discussing page formats and formatting procedures
			• Performing pages formats

13.1.6 Document inserts	• Insert objects into a document
	-insert objects
	-format objects
	-export and import objects
		• Document inserts
		  - table
		  - pictures
		  - charts
		  - word art
		  - symbols
		  - clip art
		  - equations
		  - files
			• Discussing procedures of inserting objects
			• Practising inserting objects
			• Exporting and importing objects
			• formatting objects

13.1.7 Document editing	• use spelling and grammar check facility
	• search and replace text
	• copy text
	• move text
	• delete text blocks
		• Copy and paste
		• Moving texts
		  - cut and paste
		  - drag and drop
		• Delete
		• Find and replace
		• Spelling and grammar check
			• Moving text
			• Copying and pasting
			• Cutting and pasting
			• Locating and replacing text
			• Using spelling and grammar check facility

13.1.8 Printing	• print documents	• Print dialogue box	• Opening print dialogue box • Discussing print dialogue box options • Producing printouts

13.1.9 Mail merge	• create documents using mail merge
	• explain situations where mail merge is used
		• Mail merge
		• Mail merge applications
		• Mail merge procedure
		  - form letters
		  - data source
		  - fields
		  - merging
			• Discussing uses of mail merge
			• Explaining mail merge procedures
			• Demonstrating mail merge process
			• Creating mail merge documents
			• Printing merged documents

Topic	Objectives Learners should be able to	Content	Suggested Learning Activities and Notes
13.2 Spreadsheet 13.2.1 Introduction to spreadsheet	• describe a spreadsheet package • list the advantages and disadvantages of spreadsheets	• Spreadsheet environment • Spreadsheets examples - ms excel - lotus 1-2-3	• Discussing the spreadsheet environment • Stating advantages and disadvantages of spreadsheets • Identifying uses of spreadsheets
13.2.2 Worksheet creation	• create a worksheet	• Data entry - values - labels - formulas - cell referencing • Saving and retrieving • formula types - user defined - functions - logical	• Entering labels • Entering values • Referencing data in a spreadsheet • Saving a worksheet
13.2.3 Formulae application	• create formulae • apply formulae • predict formulae outcome • copy formulae	• Formulae copying methods - dragging - copy and paste - fill	• Explaining the nature of formulae • Entering formulae using auto sum and $f_{x,}$ functions • Copying formulae using methods such as dragging • Interpreting formulae
13.2.4 Formatting worksheet	• format worksheet	• Data formatting - labels and values - currency format - decimal format - font sizes - font types • Borders and shading	• Changing appearance of data in a worksheet • Displaying data in currency and decimal format • Applying borders and shading to data and worksheet
13.2.5 Editing a worksheet	• edit worksheet	• Rows and columns • Data • Worksheet • Text • Panes	• Inserting rows and columns • Deleting rows and columns • Adjusting rows and columns • Naming worksheets • Changing worksheet values • Freezing panes

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

13.2.6 Graphs and charts	• represent data using graphs and charts
	
	•
	
	  mport and export graphs and charts
		• Data selection
		• Bar charts
		• Column charts
		• Line graphs
		• Pie charts
		• Graph formatting
		• Import and export
		  - data
		  - graphs
			• Creating different charts and graphs using a set of data
			• Importing and exporting graphs, charts and data
			• Labelling graphs and charts
			• Printing worksheets, graphs and charts

13.3   Databases
13.3.17. Introduction to databases
	• define the concept of a database
	• list the advantages and disadvantages of databases
		• Database, field, record, file
		• Database examples
		  - Ms access
		  - Lotus approach
		  - oracle
		• Uses of databases
			• Describing database concepts and using specific database packages such as Ms Access
			• Listing advantages and disadvantages of databases
			• Discussing uses of the database

13.3.2 File structure	• create a file structure	• File structure elements
		  - fields
		  - data types
		  - field size
		  - data formats
		  - validation rules and input masks
		  - tables
			• Explaining file structures
			• Opening a database program
			• Creating a database
			• Designing database files
			• Setting fields, data types, formats, field sizes, validation checks and input masks

13.3.3 Objects	• design forms, reports and queries	• Forms
		• Reports
		• Types of queries
		  - delete
		  - select
		  - update
			• Creating forms
			• Designing queries
			• Running queries
			• Designing reports

Topic	Objectives Learners should be able to:	Content	Suggested Learning Activities and Notes

13.3.4 Data manipulation	•
	
	    anipulate records
		• Records
		  - add
		  - delete
		  - edit
		  - search and filter
		  - sort
		  - print
			• Adding records
			• Deleting records
			• Editing records
			• Searching and filtering records
			• Sorting records
			• Printing records

13.4   Presentation
13.4.1   Introduction to
             presentation
	• describe the features of a
	  presentation package
	• list advantages and
	  disadvantages of presentation
	  packages
		• Presentation package
		  environment
		• Presentation packages examples
		  - ms power point
		  - freelance graphics
			• Explaining presentation environment
			• Discussing advantages and disadvantages of
			  presentation packages
			• Discussing uses of presentation packages

13.4.2   Presentation
              authoring/crea
              tion
	• design slides
	• add animation
	• show slide
		• Features of presentation
		  - slides
		  - charts
		  - presenter notes
		  - images
		  - slide transitions
		  - animation effects
			• Explaining slide design procedures
			• Opening a presentation program
			• Designing slides
			• Inserting charts and images
			• Entering presenter notes
			• Creating organograms
			• Applying slide transitions and animations
			• Saving slides
			• Retrieving slides
			• Demonstrating presentations
			• Printing presentations

14.0 APPENDICES

APPENDIX I: GLOSSARY OF TERMS USED IN QUESTION PAPERS

It is hoped that the glossary will be helpful to learners as a guide. The glossary has been deliberately kept brief not only with respect to the number of terms included but also to the descriptions of their meanings. Learners should appreciate that the meaning of a term must depend in part on its context.

1   **Define**   is intended literally, only a formal statement or equivalent paraphrases being required.

2   **State**   implies a concise answer with little or no supporting argument e.g. numerical answer that can readily be obtained by inspection

3   **List**   requires a number of points generally each of one word with no elaboration, where a number of points is specified this should not be exceeded.

4   **Explain**   may imply reasoning or some reference to theory depending on the context

5   **Describe**   requires the candidate to state in words (using diagrams where appropriate) the main points of the concept

6   **Outline**   implies brevity that is restricting the answer to given essentials

7   **Predict/deduce**   the candidate is expected to produce the expected answer by making a logical connection between other pieces of information

8   **Suggest**   it is used in two main contexts that is either to imply that there is no unique answer or to imply that learners are expected to apply their general knowledge

9   **Find**   is a general term that may variously be interpreted as calculate, measure, determine etc

10   **Determine**   often implies that the quantity concerned cannot be measured directly but is obtained by calculation

APPENDIX II: ACRONYMS

CDs	Compact Disks
CAD	Computer Aided Design
CAM	Computer Aided Manufacture
CCTV	Closed Circuit Television
CPU	Central Processing Unit
CRT	Cathode Ray Tube
DVDs	Digital Versatile Disks
FTP	File Transfer Protocol
GUI	Graphical User Interface
HTTP	Hyper Text Transfer Protocol
ICT	Information and Communication Technology
IT	Information Technology
Internet	International Network
ISP	Internet Service Provider
LAN	Local Area Network
LCD	Liquid Crystal Display
MAN	Metropolitan Area Network
MICR	Magnetic Ink Character Reader
NAND	NOT AND
OCR	Optical Character Reader
OMR	Optical Mark Reader
PAN	Personal Area Network
PDA	Personal Digital Assistant
TELNET	Terminal Emulation Programs such as internet
URL	Uniform Resource Locator
VDU	Visual Display Unit
VoIP	Voice over Internet Protocol
WAN	Wide Area Network
WIMP	Windows Icons Menus Pointer
WLAN	Wireless Local Area Network
WWW	World Wide Web

APPENDIX III: PRACTICAL ASSESSMENT GUIDELINES

Computer Studies is a practical subject and a range of practical exercises should complement the study of the practical parts of the syllabus. It is recommended that learners should be exposed to **four** practical lessons per week. It is also recommended that the minimum computer-pupil ratio be 1:2. In cases where computers are inadequate, teachers are encouraged to group the learners into manageable group sizes. Where possible, machines should be loaded with integrated packages to facilitate easy importing and exporting of documents.

Practical Examination

The practical examination session should be invigilated by the Computer Studies teacher(s) and another from any department. The Computer Studies teacher is meant to support learners ONLY in times of software and hardware challenges during the examination. The practical examination is marked by an external examiner. ZIMSEC may monitor the administration of the practical examination at sampled schools.

Practical Coursework

Candidates are expected to carry out pieces of work using application packages as follows:

Package	No. of Pieces
Word processing	3
Spreadsheet	3
Database	2
Presentation	1

During the **five** terms, the candidates must carry out **at most two pieces** of work per term. The pieces of work must be dated and contain school and candidate details. The pieces of work must be filed in a flat file. The course work is **marked** by the Computer Studies teacher soon after the completion of each peace. The **files** must be submitted to ZIMSEC through the normal channel.

APPENDIX IV: RESOURCES AND EQUIPMENT

 Infrastructure and Equipment

For a school to run the 7014 Computer Studies Syllabus for examination purposes, the under listed infrastructure and equipment need to be in place

Computer Laboratory

Personal Computers to accommodate at most 2 students per computer and a printer
Computer Desks and Chairs to accommodate the number of students
Dustless Displays for the Teacher (securely-mounted Whiteboard, LCD projector)

Theory Classroom

Classroom furniture to accommodate the students
Writing Surface for the Teacher (e.g. securely-mounted Whiteboard, LCD projector)

In both the above cases, there should be adequate lighting and ventilation.

NB: Networked computers and internet connectivity will be an added advantage
Adequately licensed computer software should be available for training purposes – especially the under-listed:

- Spreadsheet
- Database
- Word-Processing
- Presentation
- Operating System

APPENDIX V: SUGGESTED REFERENCE BOOKS

It should be noted that specifying a limited list of textbooks is difficult as new titles are being availed all the time. Teachers are therefore encouraged to consult other books in order to adequately cover the whole syllabus. However, below is a suggested book list which saves the purpose of being a reference guide

- British Computer Society (2005), **The BCS Glossary ICT and Computer Terms**, McMillan, UK
- Brown, G and D Watson (2010), **IGCSE ICT**, Hodder Education, UK
- Doyle, S. (2011), **Information Systems for you 4th Edition**, Nelson Thompson, UK
- French, C. S (1996), **Data Processing and ICT 5th edition**, Thompson, UK
- Lead Better & Wain Wright (2004), **IGCSE Computer Studies and IT**, Cambridge University Press, UK
- Nowel Kalicharan (1998), **An Introduction to Computer Studies**, Cambridge University Press, UK
- Roderick, T & Rushbrook, G (2002), **ICT for GCSE**, Oxford University Press, UK
- Taylor, G. (1991), **GCSE Computer Studies and Information Technology**, McMillan, UK