



Republic of Zambia

Ministry of Education, Science, Vocational Training and Early Education



COMPUTER STUDIES SYLLABI

GRADES 8 TO 12

PUBLISHED BY THE CURRICULUM DEVELOPMENT CENTRE
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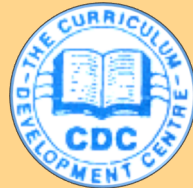


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Ministry of Education, Science, Vocational Training and Early Education

COMPUTER STUDIES SYLLABUS

GRADES 8 AND 9



Prepared and Published by the Curriculum Development Centre
P.O. Box 50092
Lusaka

JANUARY 2013

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VISION

Quality, lifelong education for all which is accessible, inclusive and relevant to individual, national and global needs and value systems.

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Preface

The syllabus was produced as a result of the Curriculum review process carried out by the Ministry of Education, Science, Vocational Training and Early Education under the auspices of the Curriculum Development Centre (CDC). The curriculum reform process started way back in 1999 when the Ministry of Education commissioned five (5) curriculum studies, which were conducted by the University of Zambia. These studies were followed by a review of the lower and middle basic and primary teacher education curriculum. In 2005 the upper basic education National survey was conducted and information from learners, parents, teachers, school managers, educational administrators, tertiary institutions traditional leaders civic leaders and various stakeholders in education was collected to help design a relevant curriculum.

The recommendations provided by various stakeholders during the Upper Basic Education National survey of 2005 and National symposium on curriculum held in June 2009 guided the review process.

The review was necessitated by the need to provide an education system that would not only incorporate latest social, economic, technological and political developments but also equip learners with vital knowledge, skills and values that are necessary to contribute to the attainment of Vision 2030.

The syllabus has been reviewed in line with the Outcome Based Education principles which seek to link education to real life experiences that give learners skills to access, criticize analyse and practically apply knowledge that help them gain life skills. Its competences and general outcomes are the expected outcomes to be attained by the learners through the acquisition of knowledge, skills, techniques and values which are very important for the total development of the individual and the nation as a whole.

Effective implementation of Outcome Based Education requires that the following principles be observed: clarity of focus, Reflective designing, setting high expectations for all learners and appropriate opportunities.

It is my sincere hope that this Outcome Based syllabus will greatly improve the quality of education provided at Grade 8 and 9 level as defined and recommended in various policy documents including '*Educating Our Future 1996*' and the '*Zambia Education Curriculum Framework 2013*'.



Chishimba Nkossa
Permanent Secretary
Ministry Of Education, Science, Vocational Training and Early Education.

Acknowledgements

The syllabus presented here is a result of broad-based consultation involving several stakeholders within and outside the education system. Many individuals, institutions and organizations were consulted to gather their views on the existing syllabus and to accord them an opportunity to make suggestions for the new syllabus. The Ministry of Education wishes to express heartfelt gratitude to all those who participated for their valuable contributions, which resulted in the development of this syllabus.

The Curriculum Development Centre worked closely with other sister departments and institutions to create this document. We sincerely thank the Directorate of Teacher Education and Specialized Services, the Directorate of Planning and Information, the Directorate of Human Resource and Administration, the Directorate of Open and Distance Education, the Examinations Council of Zambia, the University of Zambia, schools and other institutions too numerous to mention, for their steadfast support.

We pay special tribute to co-operating partners especially JICA and UNICEF for rendering financial technical support in the production of the syllabus.



C.N.M Sakala (Mrs)

Director-Standard and Curriculum

Ministry Of Education, Science, Vocational Training and Early Education

Rationale

The major focus of Computer Studies is the development of productivity tools skills, which are important for success in future postsecondary studies. Computer Studies is relevant for all students because it incorporates a broad range of transferable skills and techniques, including logical thinking, creative design, synthesis, and evaluation. It also teaches generically useful skills in such areas as communication, time management, organization, and teamwork.

Computer Studies will provide students with the knowledge and skills to understand the underpinnings of current computer technology and prepare them for emerging technologies. A foundation in this discipline will introduce learners to the excitement and opportunities afforded by this dynamic field and will begin to prepare them for a range of rewarding careers.

The subject will build a strong foundation for those who wish to move on to further study and training in specialized areas such as; computer science, education, computer engineering, software engineering, information technology, database analysis, and game development.

General Outcomes

- Computer Studies is relevant for all students because it incorporates a broad range of transferable skills and techniques, including logical thinking, and creativity.
- Computer Studies teaches generically useful skills in such areas as communication, time management, organization, and teamwork.

Key Competences

- ***Understand and apply requirements of Computer Studies ethics and security:***
Learners are expected to be competent in applying the new knowledge so acquired in advancing their daily lives of those of others. They should be able to use computer related software, gadgets and appliances without difficulty. They should also be able to understand the language that is normally used in computing.
Awareness of the risks of using the computer is also important at this level. Software and hardware security is also of great importance at this level.
- ***Share their knowledge and skills through the internet:***
The Internet is a very powerful media of communication nowadays. After learning CS learners should be able to find useful information using the Internet. They should also be aware of the dangers of using the Internet. The correct use of email addresses for formal communications purposes is vital and. Collaborate and share knowledge and ideas with others.

- ***Create posters and other advertisement materials for the school events:***
Learners are expected to be conversant in using multimedia software at this level of education. Learners should be able to correctly use word processing and presentation software.
- ***Carry out a simple Computer related project:***
To enhance their understanding at this level learners will be expected to carry out simple computer related projects either in word processing or multimedia of computing.

Suggested Teaching Methodology

Computer Studies (CSt) syllabus offers a wide perspective of the subject. It is not restricted to computers but rather usage and application of a variety of technologies and its impact on society. The nature of the CSt subject is such that it will best be learnt within the context of application. As such, activities that replicate real life should form an integral part of the teaching and learning methodologies. CSt is meant to prepare learners for the world of work, further education within the discipline and simply lifelong application of technology. Since CSt is extremely dynamic and also significantly always impacting on the way we live, learners should be encouraged to grapple with its complexities if they are to become competitive citizens in today's globalised world.

It is suggested that individual and/or group work/ or homework be given to learners to do during their spare time or prep. The computer laboratory may be open to learners to do their assignments. However learners should never be left alone in the computer laboratory especially when it involves searching for information from the Internet. The teacher should try by all means to desist learners from visiting offensive websites.

The indicator of the achievement of these General outcomes will be based on acquisition of the skills through Assessment of the learner's competence on both theory and practical outcomes. The sequence of the syllabus does not necessarily dictate the order in which topics are to be taught.

Principles and procedures

Learners need to develop skills to help them learn. Skills development should happen as a part of learners' learning experiences and the learning and practising of skills needs to occur in the context of units being taught.

Learning of Skills tends to be most effective when:

- learners go from the known to the unknown
- learners understand why it is necessary to gain mastery of specific skills
- skills are developed sequentially at increasing levels of difficulty

- learners identify and analyse the components of the skill
- there are frequent opportunities for practice and immediate feedback possibly frequent use of computer or computer embedded gadgets or tools.
- the skills being taught are varied in terms of amount and type, according to the needs and ability of learners

To teach skills effectively, a teacher needs to include learning activities that span from teacher-directed to student-centred learning, use groups of different sizes ranging from the whole class to small groups and use a range of teaching strategies which use higher-order skills as learners' progress.

Teaching and Learning Strategies for Computer Studies

Teaching and learning strategies for Computer Studies shall include:

Brainstorming - to stimulate creative thinking, Consequence charts - Cause and effect approach, Classroom displays (focuses on the current unit), Charts, Diagrams, Evaluation, Discussion, Guest speaker or visitor, educational tours and visits, Models, Photographs and pictures, Presentations, Problem solving - Learners are involved in identifying and working towards solutions, Reflective learning - thinking about what has been learnt, Research - to think of the questions you want learners to answer.

Software

Throughout the course the minimum recommended Operating System (OS) is Microsoft Windows 7[®]. Microsoft Office 2007[®] or later versions will also be assumed for use to demonstrate Word processing (Word), Spread sheets (Excel), Presentation (PowerPoint), Desktop Publishing (Publisher) and Multimedia.

Time and Period Allocation:

This syllabus covers a two-year course in Computer Studies and will require at least four 40-minute periods per week to complete (One double for practical and two single periods for theory).

Assessment Scheme

The assessment framework utilises various types of continuous assessment strategies. This is meant to determine learners' competences in the CS outcomes presented here. It is desired that the teacher as much as possible utilise assessment strategies that promote active learning by the learner. The case in point includes portfolios, observation sheets (to gauge certain competences), written assignments and reports, presentations, projects and experiments.

Computer Studies is a practical subject and as such this syllabus places a lot of emphasis on the use of common application packages. Object oriented programming languages will not be examined at this level. It will therefore be the schools' responsibility to ensure that relevant equipment and software needed by learners to meet the minimum requirements for assessment purposes are acquired.

The final assessment of Computer Studies is divided into two sections.

1. Theory (Paper 1) - (External assessment by the examination board): 60%
2. Practical (Paper 2) - (External assessment by the examination board): 40%

Computer Studies assessment at junior secondary school level covers the six categories of Bloom's Taxonomy with their respective weightings on Assessment Objectives (AOs) as shown below:

Paper	Levels of Assessment	Weighting on AOs	TOTAL MARKS
PAPER 1	Knowledge and Comprehension	25%	60
	Analysis (Analytical Skills)	11%	
PAPER 2	Application (Hands on Skills)	57%	40
	Synthesis and Evaluation	7%	
Total Marks of Paper1 and Paper 2			100%

The weightings of the subject will be done against Assessment Objectives (AOs) and these are drawn from the whole junior secondary school syllabus.

It is therefore important that the teacher well balances the teaching of the content of the subject accordingly.

GRADE 8

General Outcomes

- Demonstrate an understanding of the concept of **safety and misuse** when using technology
- **Operate and take care** of a computer and its common peripherals
- Use a computer to **accomplish given tasks**.
- **Appreciate** the role computers play in everyday life.
- **Demonstrate** understanding and operating skills required for a variety of CS
- **Communicate** using appropriate multimedia to interact with others.
- Enable learners attain **Entrepreneurship** skills for survival
- Use computer as a tool for **learning** and **understanding** other subjects

Key Competences

- Use the computer and its productivity tools effectively.
- Understand and apply requirements of CS ethics and security.
- Share their knowledge and skills through the internet
- Create posters and other advertisement materials for the school events.
- Collaborate and share knowledge and ideas with others.
- Understand basic principles behind productivity tools
- Apply basic productivity tools across their similar products
- Apply basic principles of Windows.
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GRADE 8 SYLLABUS

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
8.1 Introduction to Computer Studies	8.1.1. Parts of a computer	8.1.1.1 Describe the main parts of a computer	<ul style="list-style-type: none"> Hardware (Monitor, Keyboard, Mouse, Central Processing Unit-CPU, Uninterruptible Power Supply-UPS, printer, scanner), Software (Include: Various programmes such as the Operating system, Word processors) Difference between data and information Computer as a general purpose machine Components of a computer system (Include: central processing unit – CPU, input devices, storage devices and output devices) Uses of main parts of computer Advantages and disadvantages of a computer system Appreciating different types of storage media 	<ul style="list-style-type: none"> Observation Identification of computer parts Switching on and switching off a computer system. Comparing roles of the computer parts. Connecting a computer to a power cable and peripherals Interpretation of some computer system acronyms 	<ul style="list-style-type: none"> Computer appreciation Team work in identifying parts of the computer. Safety consciousness in handling computer.
	8.1.2. Input-process-output operations	8.1.1.2 State the three basic operations in a computer system. 8.1.1.3 Relate computer parts to the basic operations 8.1.2.4 Identify a computer as a general purpose machine that operates under different sets of instructions for various uses			
8.2 Basic Operations	8.2.1. Health and safety	8.2.1.1 Know correct posture to avoid injuries.	<ul style="list-style-type: none"> Assuming correct posture to avoid injuries. Safety issues associated with ICT use(e.g. securing power cables and avoiding liquids and dust near computers.) 	<ul style="list-style-type: none"> Manipulation of the keyboard efficiently. Identification of home keys on the keyboard. Connecting 	<ul style="list-style-type: none"> Teamwork in identifying computer peripherals. Appreciation of antiviruses.
	8.2.2. Care for Computer Systems	8.2.2.1 Demonstrate the need to take care of computer and storage media to prevent data loss			
	8.2.3. Computers and peripherals	8.2.3.1 Power up and down of			

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
	8.2.4. Security and Viruses 8.2.5. Types of user interfaces	computers and various technologies and peripherals correctly 8.2.3.2 Perform basic computer operations 8.2.4.1 Explain the consequences of theft of computers or other portable ICT devices and computer viruses. 8.2.5.1 Interact with icons and menus in a Graphic User Interface (GUI) environment.	<ul style="list-style-type: none"> Sequence of powering up and down of various technologies (Include: TV, cell phone, printer, scanner, etc) Basic computer operations (Include: Moving cursor, clicking on icon, using pull-down menus, ejecting disks etc) Consequences of theft of computers or other portable ICT devices Using different types of user interfaces Pros and cons of different types of interface (command driven and graphical user interfaces) 	<p>computers to power cables and peripherals.</p> <ul style="list-style-type: none"> Comparing and contrasting roles of the computer system. Securing computers 	
8.3 Computers in everyday life	8.3.1 Household, Entertainment and recreation appliances 8.3.2 Office Equipment 8.3.3 Industrial and Commercial Applications of computers 8.3.4 Computer based learning 8.3.5 Social and economic effects of computers	8.3.1.1 Identify and demonstrate the use of household appliances and devices that are controlled by embedded microprocessors 8.3.2.1 State common uses of office equipment 8.3.3.1 Describe knowledge of using computers in Industry. 8.3.4.1 Identify the role computers play in aiding learning 8.3.5.1 Identify social and economic effects of	<ul style="list-style-type: none"> Household appliances and devices that are controlled by embedded microprocessors (e.g. Washing machines, microwave ovens, digital watches and cameras) Common uses of office equipment (Include: Computers, Printers, Fax machines, Telephone systems, Liquid Computer Device -LCD projectors, scanners etc) Computers in Industry (Include: chemical 	<ul style="list-style-type: none"> Identification use of household appliances and devices that are controlled by embedded microprocessors Manipulation of computer related appliances. Demonstration of use of household appliances and devices that are controlled by embedded 	<ul style="list-style-type: none"> Appreciation of use of computer in industries and home. Skilfulness in using computers in everyday life. Inquisitiveness in using computers.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		computers	<p>processing plants i.e. Indeni, Mining, Liming and Cement, beverage manufacturing / Financial institutions i.e LUSE, Health, Ticket reservation systems, defence and security etc)</p> <ul style="list-style-type: none"> Computers as aids for learning (e.g. Self placed interactive lessons that effectively use multimedia) Social and economic effects of computers (e.g. security concerns, deskilling, failure of systems, dependability on systems, human rights violation and computer misuse, cyber crime) 	<p>microprocessors.</p> <ul style="list-style-type: none"> Identification of social and economic effects of computers 	
8.4 Productivity Tools (Word Processing)	8.4.1 Introduction to Windows 8.4.2 Key in and Edit Text 8.4.3 Text Manipulation and Formatting 8.4.4 Proof Reading 8.4.5 Print Preview and Printing 8.4.6 Saving Files 8.4.7 Drawing Simple Graphics	8.4.1.1 Demonstrate how to operate Windows 8.4.1.2 Demonstrate how to start and quit a program 8.4.2.1 Demonstrate text input, type over, insertion of words and symbols, deletion and reformatting 8.4.3.1 Demonstrate copying, deleting and moving blocks of text within a document 8.4.3.2 Illustrate the use of a clipboard 8.4.3.3 Use the undo command to reverse the effect of the last action	<ul style="list-style-type: none"> Familiarise with the main functions of the keyboard, shift and control keys (Include: keyboard shortcuts to windows operations) start and quit a program Text input, type over, insertion of words and symbols, deletion and reformatting Copying, deleting and moving blocks of text within a document Clipboard (temporary storage area in the memory) 	<ul style="list-style-type: none"> Inputting data correctly in a word processor. Icon identification of productivity tools. Manipulation of text in the word processor. Agility in typing text Text management (inputting of text, formatting of text) Accuracy in entering data in a 	<ul style="list-style-type: none"> Productivity in using word processor. Efficiency in text manipulation and editing. Effectiveness in the use of productivity tools. Entrepreneurship in using productivity tools. Appreciation of productivity tools.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		8.4.3.4 Use the redo command to reverse the undo action 8.4.4.1 Check the spelling of words in a document against a built-in dictionary 8.4.4.2 Describe the limitations of the spelling checker 8.4.5.1 Use the print preview and print a document 8.4.6.1 Demonstrate how to save a file to a specific location or media 8.4.7.1 Create graphics using basic graphic elements	<ul style="list-style-type: none"> Undo command to reverse the effect of the last action Redo command to reverse the undo action Spelling of words in a document against a built-in dictionary (Include: Thesaurus) Limitations of the spelling checker Print preview and print a document Saving a file to a specific location or media graphics using basic graphic elements (e.g. lines, curves, sectors, polygons, circles, ovals, squares and rectangles) 	word processor.	
8.5 Productivity Tools (Spread Sheets)	8.5.1 Introduction to Spreadsheet. 8.5.2 Entering and editing data 8.5.3 Adding Formula 8.5.4 Saving and Printing	8.5.1.1 Demonstrate an understanding of the concept of worksheet and workbook 8.5.1.2 Explain the common features of a spreadsheet 8.5.1.3 Demonstrate the application of a spreadsheet in everyday life 8.5.2.1 Enter and manipulate data using spread sheets for a specific purpose 8.5.2.2 Illustrate the skill of entering text and numbers in specified cells	<ul style="list-style-type: none"> Worksheet and workbook Common features of a spreadsheet (cells, formula bars) Application of a spreadsheet in everyday life (i.e. Student records, business stock, accounting, invoices) Entering and manipulating data using spread sheets Deleting and editing text and numbers in cells as required Entering text and numbers in specified cells 	<ul style="list-style-type: none"> Loading of a single or more spreadsheet Switching between worksheets and between workbooks Application of addition, subtraction, multiplication and division symbols with formulae Manipulation Application of 	<ul style="list-style-type: none"> Accuracy in using spreadsheet. Appreciation of use of spreadsheet in making calculations. Quality work in the use of spreadsheet.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		8.5.2.3 Delete and edit text and numbers in cells as required 8.5.3.1 Enter data, numbers and apply simple formula with a range not more than ten cell addresses 8.5.3.2 Design, create and modify a spread sheet for a specific purpose with a maximum of five cell addresses 8.5.4.1 Save to specified folder and print a spread sheet 8.5.4.2 Change magnification to appropriate percentage to print a given spread sheet	<ul style="list-style-type: none"> Entering data, numbers and applying simple formula with a range not more than ten cell addresses (i.e. addition, subtraction, multiplication and division) Designing, creating and modifying a spread sheet for a specific purpose (using functions like sum, product, average and quotient) with a maximum of five cell addresses Saving to specified folder and print a spread sheet Changing magnification to appropriate percentage to print a given spread sheet formulae 	quick numerical computations <ul style="list-style-type: none"> Accuracy in the use of spreadsheet. Designing of a required spreadsheet. 	
8.6 Productivity Tools (PowerPoint)	8.6.1. Getting Started with PowerPoint 8.6.2. Slides & Presentations	8.6.1.1. Getting Started 8.6.1.2. Understand PowerPoint Principles 8.6.1.3. Start PowerPoint 8.6.1.4. Use an Installed Template 8.6.1.5. Recognize the Screen Layout 8.6.1.6. Understand the Ribbon and Quick Access Toolbar 8.6.1.7. Use Help	<ul style="list-style-type: none"> Getting Started PowerPoint Principles Starting PowerPoint Using Installed Template Recognizing the Screen Layout Ribbon and Quick Access Toolbar Use Help <ul style="list-style-type: none"> Different Views Slide Show Basics Save, Close and Open Presentations Presentation / Design Templates Slides / Insert Slides / 	<ul style="list-style-type: none"> Presenting Powerpoint Formatting slide shows. Enhancing slide shows Working with objects in PowerPoint Identifying pre-designed layouts or template for appropriate tasks Modifying already created publications 	<ul style="list-style-type: none"> Productivity (Powerpoint Presentations) Efficiency in the use of productivity tools in PowerPoint. Entrepreneurship (Presentations etc) Effectiveness in the use of productivity in PowerPoint tools. Inquisitiveness in the use of

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		8.6.2.1. Understand and Use Different Views 8.6.2.2. Understand Slide Show Basics 8.6.2.3. Save, Close and Open Presentations 8.6.2.4. Use Presentation / Design Templates 8.6.2.5. Add New Slides / Insert Slides / Delete Slides 8.6.2.6. Change Slide Layout and Background	Delete Slides <ul style="list-style-type: none"> Slide Layout and Background 	<ul style="list-style-type: none"> Enhancing objects in publications 	PowerPoint <ul style="list-style-type: none"> Efficiency in the use of PowerPoint.
8.7 Productivity Tools (Desktop publishing)	8.7.1. Publishing basics and Features 8.7.2. Pre-designed layouts or Templates 8.7.3. Fonts 8.7.4. Elementary Graphics 8.7.5. Colours and Fonts 8.7.6. 8.6.6 Clip art/Re-designed graphics	8.7.1.1. Define desktop publishing 8.7.1.2. Identify the two types of a publication 8.7.1.3. Compare different features of desktop publishing and word processing software 8.7.1.4. Generate frames in which text and graphics are placed 8.7.1.5. Edit the layout of a publication 8.7.2.1 Input text directly into a publication 8.7.2.2 Import text from word processing document into a publication 8.7.3.1 Apply the three elements of fonts. 8.7.4.1 Create graphics using basic graphic elements 8.7.5.1 Select colours for the outlines and fill of objects from the palette	<ul style="list-style-type: none"> Desktop publishing (Include: typesetting, and layout designs using desktop computers) Types of a publication (Include: text and graphics) Features of desktop publishing and word processing software Frames in which text and graphics are placed Editing the layout of a publication Inputting text into a publication Importing text from word processing document into a publication Three elements of fonts (Include: typeface, style and point size) Graphics using basic 	<ul style="list-style-type: none"> Identification of productivity tools. Manipulation of productivity tools Accuracy in the use of productivity tools. Loading a publishing package Switching between two or more loaded publishing packages 	<ul style="list-style-type: none"> Entrepreneurship in the use of productivity tools. Accuracy in the use of productivity tools. Teamwork in designing graphics. Quality work in using desktop publishing. Appreciation of the use of desktop publishing.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		8.7.5.2 Integrate Text into graphic design 8.7.6.1 Retrieve and edit pre-designed graphics to compose a picture 8.7.6.2 Know how productivity tools complement each other	graphic elements (e.g. lines, curves, sectors, polygons, circles, ovals, squares and rectangles) <ul style="list-style-type: none"> • Colours for the outlines and fill of objects from the palette • Integrating Text into graphic design • Retrieving and editing pre-designed graphics to compose a picture • Identify how productivity tools compliment each other 		
8.8 Networks and the Internet	8.8.1. Networking 8.8.2. The Internet 8.8.3. Web browsers 8.8.4. Using search engines 8.8.5. Email	8.8.1.1 Analyse the rationale of networking computers in different locations. 8.8.1.2 Differentiate between Wired and wireless networks 8.8.2.1 Describe how to access information using a local area network and a Wide area network. 8.8.2.2 Upload and download text, image, audio and video files 8.8.2.3 Illustrate ability to search the web for specific information. 8.8.3.1 Identify web browsers as a tool to accessing web pages on the internet. 8.8.3.2 Demonstrate how to open a web browser and go to	<ul style="list-style-type: none"> • Networking computers in different locations (Include: sharing software, documents, databases and other resources) • Differentiate between Wired and wireless networks • Display proficiency in accessing information using a local area network (LAN), and a Wide area network (WAN) • Upload and download text, image, audio and video files • Illustrate ability to search the web for specific information. • Recognise web browsers as a tool to accessing web pages on the internet 	<ul style="list-style-type: none"> • Connecting a network cable to a computer • Accessing different media files from external storage devices and internal storage devices • Launching a web browser • Entering default web sites and edit the sites to different ones • Retrieving (Searching) specific information from the Internet 	<ul style="list-style-type: none"> • Understanding of types of ports (connection points) • Appreciation of internal storage media and external storage media • Appreciation that information is also stored on remote computers which require internet connection to access information

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		specific Universal Resource Locator (URL) 8.8.4.1 Define a search engine and what it is used for 8.8.4.2 Use a search engine to look for information on the internet 8.8.5.1 Explain what email is used for	(Include: Firefox, Safari, Internet Explorer etc) <ul style="list-style-type: none"> • Demonstrate how to open a web browser and go to specific Universal Resource Locator (URL) • Define a search engine and what it is used for • Use a search engine to look for information on the internet • Use email 		
8.9 Multimedia Files	8.9.1 Introduction to multimedia files 8.9.2 Graphics 8.9.3 Video and Audio	8.9.1.1 Introduction to multimedia files. 8.9.2.1 Create a multimedia presentation incorporating visual image features 8.9.3.2 Access available databases for images, sound clips or recorded voice to support communication 8.9.3.3 Support communications by controlling the flow of a presentation.	<ul style="list-style-type: none"> • Differences between various types of media (Include: clip art, video clips, sound and animated images) • Search for locally available multimedia files on the computer • Controlling presentations using arrow keys (Include: screen transitions, animating text and graphics) 	<ul style="list-style-type: none"> • Loading a multimedia package • Adding media clips to a presentation 	<ul style="list-style-type: none"> • Value enhancing to physically challenged learners • Productivity in using multimedia files. • Efficiency in the use of multimedia. • Effectiveness in the use video and audio on the computer system.

GRADE 9

General Outcomes

- Demonstrate an understanding of the concept of **safety and misuse** when using technology
- **Operate and take care** of a computer and its common peripherals
- Use a computer to **accomplish given tasks**
- **Appreciate** the role computers play in everyday life.
- **demonstrate** understanding and operating skills required for a variety of ICTS
- **Communicate** using appropriate multimedia to interact with others.
- Enable **learners attain** Entrepreneurship skills for survival

Key Competences

- Use the computer and its productivity tools effectively.
- Understand and apply requirements of CS ethics and security.
- Share their knowledge and skills through the internet
- Create posters and other advertisement materials for the school events.
- Collaborate and share knowledge and ideas with others.
- Understand basic principles behind productivity tools
- Apply basic productivity tools across their similar products
- Apply basic principles of Windows.

GRADE 9 SYLLABUS

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
9.1 Introduction to Computers	9.1.1 Peripheral devices 9.1.2 Input-process-output operations	9.1.2.1 Connecting peripheral devices to their appropriate computer ports 9.1.2.1 Speed of CPU. 9.1.3.1 Identify meaningful information as a result of processed input data by the computer 9.1.3.2 Appreciate that certain devices are both input as well as output	<ul style="list-style-type: none"> Peripheral devices (Include: PDAs) Recognise units of speed of a CPU (Include: Megahertz (MHz) or Gigahertz (GHz)) Defining basic computer terminology Peripheral devices Units of the processing speed and their relationship Units of storage – BIT, Byte, Megabyte, Gigabyte and their conversions. Input, process and output devices (Include: touch screens) 	<ul style="list-style-type: none"> Connecting peripheral devices to their <i>appropriate</i> computer ports Converting of bytes into Bits and converting Bits into Bytes, Kilobytes and Megabytes Interpreting the various files sizes Relating file size to storage space. 	<ul style="list-style-type: none"> Appreciating the various types of ports (serial, parallel and USB) Relation between processing speed and file size Appreciation of limitations of storage media regarding size
9.2 Basic Operations	9.2.1 Unresponsive computer 9.2.2 Security and Viruses 9.2.3 Copyright 9.2.4 Storage media	9.2.1.1 Determine how to shut down an unresponsive computer 9.2.2.1 Determine why usernames and passwords are used on computers 9.2.2.2 Identify and apply safety procedures,	<ul style="list-style-type: none"> How to rectify program failure of booting and shutting down. Security issues associated with ICT use Identify licensed software installed on a computer 	<ul style="list-style-type: none"> Shutting down unresponsive computer system. Installation and launching of Antivirus software Verifying the authenticity of software Inserting memory cards in computers, digital cameras, cell phones and related 	<ul style="list-style-type: none"> Minimizing the effects of computer system failure Avoiding compromising the system integrate Enhancement of computer system Appreciating copyright laws

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		<p>such as antivirus scans and virus checks in maintaining data integrity</p> <p>9.2.3.1 Know how to check the ID number for a software product</p> <p>9.2.3.2 Define the terms freeware, shareware and end-user licence agreement</p> <p>9.2.4.1 Compare the relationship between different measures of storage media capacities</p>	<ul style="list-style-type: none"> Understand the difference between open source software and proprietary software Identify types of memory (Include: primary and secondary memory, kilobyte, megabyte, gigabyte) 	<p>devices.</p> <ul style="list-style-type: none"> Converting memory size from one type to the other. Calculation of memory sizes and their implications on storage. 	<ul style="list-style-type: none"> Appreciating the vulnerability of memory cards on portable and hand-held devices
9.3 Information technology in everyday life	<p>9.3.1. Household appliances</p> <p>9.3.2. Computer based learning (CBL)</p> <p>9.3.3. Computers in banking and e-commerce</p> <p>9.3.4. Point of Sale</p> <p>9.3.5. Magnetic and smart cards</p>	<p>9.3.1.1 Describe particular technologies being used for specific purposes in the home</p> <p>9.3.1.2 Infer, using examples, how information and communication networks create a global community</p> <p>9.3.1.3 Demonstrate an understanding of new and emerging communication systems</p> <p>9.3.2.1 Identify different types of CBL software</p>	<ul style="list-style-type: none"> How to connect household equipment (Include: Connecting a decoder, DVD player, Hi-Fi system to a TV) How to connect office equipment (Include: connecting LCD projectors, scanners, printers, digital cameras, cell phones to computers) Appreciating the various communication technologies 	<ul style="list-style-type: none"> Connecting of household equipment (connecting a decoder, DVD, player, Hi-Fi system to a TV) Connecting of office equipment (Include: Connecting LCD projectors, scanners, printers, digital cameras, cell phones to computers) Making calls and Saving phone numbers on cell phones Starting a online conversation (Include: Skype) Signing in oneself to a particular social network (e-mail, Skype, Facebook, 	<ul style="list-style-type: none"> Avoiding damage to household and office equipment. Maximising the use of household equipment Avoiding damage to office equipment Knowledge of record keeping Communicating using internet technologies Managing access to computer resources (stocks and price lists) Integration of Computers in other learning areas.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		9.3.3.1 Associate the use of computers to organise, retrieve and process data 9.3.3.2 Appreciate the linking of computers in different locations to enable electronic fund transfer. 9.3.3.3 Describe e-commerce and the process of purchasing goods and services online 9.3.3.4 List advantages and disadvantages of e-commerce 9.3.4.1 State common uses of computers in the supermarket 9.3.4.2 Determine the significance of using bar codes in the super market (Include: identifying products, statistics and keeping track of sold items) 9.3.5.1 Associate the use of PIN (personal identification number) as a security measure to initiate transaction	<ul style="list-style-type: none"> • Examples of CBL Software (Include: drill practice, tutorial, simulation, problem solving etc.) • Knowledge of social networks (Include: cell phones, internet, Skype etc.) • Knowledge of directory, folders and files • Linking of computers in different locations to enable electronic fund transfer (Include: GIRO, NETS, and Automated Teller Machines-ATMs etc.) • How to conduct online transaction • Discussing the pro and cons of e-commerce • Appreciate the use of bar codes • Fundamental information contained on the bar code • The link between the price list and the bar 	Twitter) <ul style="list-style-type: none"> • Manipulating accounts (include: Creating, changing, editing and deleting user accounts 	

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		9.3.5.2 using magnetic card Describe the benefits of the trend towards cashless electronic transaction	code • Security in business transactions among workers • Appreciate stock management		
9.4 Productivity Tools (Word Processing)	9.4.1 Keyboard skills 9.4.2 Document setup and layout 9.4.3 Search and replace 9.4.4 Copying text from other document windows 9.4.5 Pagination 9.4.6 Page formatting 9.4.7 Finding and file retrieval	9.4.1.1 Exhibit mastery of the keyboard keys including function keys and touch typing 9.4.2.1 Use the tab key to indent the first line of the paragraph 9.4.2.2 Demonstrate competence in creating tables, inserting and deleting rows and columns 9.4.2.3 Insert objects (e.g. Clip art, mathematical formula etc) 9.4.3.1 Use the search command to locate specified text quickly in a document 9.4.3.2 Use the search and replace command to carry out replacement of specified text quickly in a document	• How to use function keys (F1 to F12) and combination keys • How to create paragraphs in word processing • How to create, edit and delete tables using the table insert • How to Integrate clip art and mathematical formulae in word processing document • How to use find or search command to locate a specified word • How to replace a located word • How to use copy / cut and paste • How to insert roman numerals and denary page numbers in a word document • How to insert page breaks • How to set page	• Using function keys (F1 to F12) and combination keys • Creating paragraphs in word processing • creating, editing and deleting tables using the table insert • Integrating clip art and mathematical formulae in word processing document • Finding or searching command to locate a specified word • Replacing a located word • Inserting roman numerals and denary page numbers in a word document • Inserting page breaks • Inserting page margins, paper size and page orientation before printing a document • Saving and saving as commands when saving a file to a specified storage external or internal storage devices • Deleting a file and a folder containing files and how to retrieve a deleted file that	• Productivity (letter writing, minutes, assignments etc) • Efficiency in the use of productivity tools. • Entrepreneurship (letter and document writing, minutes, assignments etc) • Effectiveness in the use of productivity tools.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		9.4.4.1 Copy blocks of text from one document window to another 9.4.5.1 Demonstrate insertion of page numbers of any given format 9.4.5.2 Insert page and section breaks to organise text in a document 9.4.6.1 Use the page set up command to set margins, paper size and page orientation 9.4.8.1 Demonstrate ability to save file to a specified storage drive or device 9.4.8.2 Navigate to a particular drive and retrieve a specific file 9.4.8.3 Delete file(s) and retrieve from the recycle bin	margins, paper size and page orientation before printing a document <ul style="list-style-type: none"> • How to use save and save as when saving a file to a specified storage external or internal storage devices • How to delete a file and a folder containing files and how to retrieve a deleted file on the computer from the recycle bin • Import the drawn pie chart from a spreadsheet into a word processor 	was on the computer from the <i>recycle bin</i>	
9.5 Productivity Tools (Spread Sheets)	9.5.1. Amending a spread sheet 9.5.2. Formatting cells 9.5.3. Sorting and filtering data 9.5.4. Using Formula and Functions. 9.5.5. Charts	9.5.2.1 Insert and delete columns and rows as required 9.5.3.1 Change column width and row height as required 9.5.3.2 Change number of decimal places displayed in cells as required	<ul style="list-style-type: none"> • How to draw pie chart using a spreadsheet. • How to insert and delete columns and rows as required • How to change column width and row height • How to change 	<ul style="list-style-type: none"> • Drawing pie chart using a spreadsheet. • Linking spreadsheet to word document using hyperlinks • Importing the drawn pie chart from a spreadsheet into a word processor • Sorting data in a pre-determined sequence • Filtering of data in a 	<ul style="list-style-type: none"> • Productivity in budgeting, accounting, sales forecasting, stock management. • Efficiency in using spreadsheet. • Entrepreneurship in the use of spreadsheet in tracking a business. • Effectiveness of

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		9.5.3.3 Change text orientation within a cell 9.5.4.1 Sort and filter data as specified 9.5.5.1 Enter data, numbers and apply more advanced formula. 9.5.4.1 Change percentage specification to print a given spreadsheet 9.5.5.1. Use chart wizard to create bar, line and pie charts of selected data 9.5.5.2. Print a chart	decimal places in cells • How to change text orientation in a particular cell or a group of cells • How to apply advanced functions (Include: SUM, AVERAGE, IF, MAX, MIN, COUNT, COUNTA, SUMIF) • How to change percentage specification using zoom facility • How to use chart wizard • How to link spreadsheet to word document using hyperlinks • How to export the drawn pie chart from a spreadsheet into a word processor • How to print preview and print • How to paginate using page break preview	spreadsheet • Interpreting numerical data into graphs or charts • Application of mathematical concepts.	spreadsheet.
9.6 Productivity Tools (PowerPoint)	9.6.1. Formatting 9.6.2. PowerPoint	9.6.1.1. Use Animation Schemes and Custom Animation	Animation Schemes and Custom Animation	• Presenting Powerpoint • Formatting slide shows. • Enhancing slide shows	• Productivity (Powerpoint Presentations)

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
	Objects 9.6.3. Slide Shows	9.6.1.2. Apply Headers & Footers 9.6.1.3. Work with Slide Master 9.6.2.1. Insert and Animate Images 9.6.2.2. Insert a Chart 9.6.2.3. Use Drawing Tools and Shapes on Slides 9.6.2.4. Select, Rotate and Flip Objects 9.6.2.5. Arrange and Distribute Objects 9.6.2.6. Change Object Colours 9.6.2.7. Import Images 9.6.3.1. Select the Correct Output Format 9.6.3.2. Set up a Slide Show 9.6.3.3. Apply Slide Transitions 9.6.3.4. Run the Presentation 9.6.3.5. Print Slides, 9.6.3.6. Designing of Presentations and Handouts	<ul style="list-style-type: none"> • Headers & Footers • Slide Master • Organization Chart • Move, Resize and Copy Objects • Images • Chart • Drawing Tools and Shapes on Slides • Select, Rotate and Flip Objects • Arrange and Distribute Objects • Change Object Colours • Import Images • Output Format • Set up a Slide Show • Slide Transitions • Presentation • Slides, • Presentations and Handouts 	<ul style="list-style-type: none"> • Working with objects in PowerPoint presentation • Identifying pre-designed layouts or template for appropriate tasks • Modifying already created publications • Enhancing objects in publications 	<ul style="list-style-type: none"> • Efficiency in the use of productivity tools in PowerPoint. • Entrepreneurship (Presentations etc) • Effectiveness in the use of productivity in PowerPoint tools. • Inquisitiveness in the use of PowerPoint • Efficiency in the use of PowerPoint.
9.7 Productivity Tools (Desktop publishing)	9.7.1. Charts, Diagrams and pictures 9.7.2. Text wrapping 9.7.3. Importing Text	9.7.1.1. Add charts, diagrams and pictures Edit, resize and crop charts, diagrams and pictures 9.7.2.1. Demonstrate how to wrap text around	<ul style="list-style-type: none"> • Identifying how productivity tools compliment each other • Demonstrating wrapping of text around charts, 	<ul style="list-style-type: none"> • Identifying pre-designed layouts or template for appropriate tasks • Modifying already created publications • Enhancing objects in publications 	<ul style="list-style-type: none"> • Entrepreneurship in the use of Desktop publishing. • Effectiveness use of Desktop publishing.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
	9.7.4. Manipulation of pre-designed templates 9.7.5. Colours and Fonts	<p>charts, diagrams and pictures</p> <p>9.7.2.2. Generate frames in which charts, diagrams and pictures are placed</p> <p>9.7.2.3. Import text from other programs (word processor and spreadsheet)</p> <p>9.7.2.4. Import charts, diagrams and pictures from other programs</p> <p>9.7.4.1. Create calendars, notices, fliers, brochures, newsletters, resumes using templates</p> <p>9.7.5.1. Edit manipulated templates</p> <p>9.7.5.2. Select colours for the outlines and fill of objects from the palette</p>	<p>diagrams and pictures</p> <ul style="list-style-type: none"> • Understanding how to generate charts, diagrams and pictures • Distinguishing between importing and exporting of publications • Differentiating the use of various templates • Modifying created publications • Enhancing objects in a publication through the use fonts and colours 	<ul style="list-style-type: none"> • Saving and printing previewing publications 	
9.8 Networks and the Internet	7.8.1. Networks 7.8.2. The Internet	<p>7.8.2.1. Outline the advantages of group working (Include: shared files, applications and printers)</p> <p>7.8.2.2. Display understanding of the network terminologies (Include: local area</p>	<ul style="list-style-type: none"> • Managing of shareable resources (files, applications, and printers) • Distinguishing various types of networks using examples (e.g. computer network, cellular network (hotspots), satellite 	<ul style="list-style-type: none"> • Sharing resources using sharing facility • Deriving appropriate web addresses from institution/organisation/company names based on services provided (e.g. org, .edu, ac, .co, .gov. etc) • Starting, refreshing and terminating web search • Utilising internet 	<ul style="list-style-type: none"> • Reduction in computer hardware and software costs • Sourcing of information from a broader scope • Reduction in communication costs through email and other free Internet services.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		<p>network (LAN) and Wide area network (WAN), Personal Area Network (PAN), Storage Area Network (SAN), Metropolitan Area Network (MAN), Wi-Fi.).</p> <p>7.8.2.1. Describe the difference between an intranet and an extranet</p> <p>7.8.2.2. Differentiate between World Wide Web and the internet</p> <p>7.8.2.3. Recognise components of a Universal Resource Locator (URL)</p> <p>7.8.2.4. Show how to stop a web page from downloading</p> <p>7.8.2.5. Illustrate how to refresh, move back and forward</p> <p>7.8.2.6. Appreciate various services available on the internet</p>	<p>network.)</p> <ul style="list-style-type: none"> • Distinguishing between the two main types of Local Area Networks (Intranets and Extranets) • Relating the World Wide Web (global web pages) to the Internet (technologies, infrastructure and protocols) • The relationship between URL and Internet surfing • Understanding the navigation patterns of web pages • Appreciating the communication and information services provided by the Internet (Include: On-line news, shopping etc.) • Understanding the syntax of email addresses 	<p>communication tools (Skype, twitter, Facebook,</p> <ul style="list-style-type: none"> • Creating of an <i>email address</i> • <i>Sending</i> and receiving a message through email. 	
9.9 Multi media files	<p>9.9.1 Digitising images</p> <p>9.9.2 Video and Audio</p>	<p>9.9.1.1 Create digital images using a scanner and or a digital camera</p> <p>9.9.1.2 Edit digitised images</p> <p>9.8.1.3 Saving created images</p>	<ul style="list-style-type: none"> • Creating digital images using scanners and cameras • Editing and 	<ul style="list-style-type: none"> • <i>Creating</i> digital images using scanners and cameras • <i>Editing</i> and enhancing scanned and digitised images • <i>Appropriately</i> saving of file 	<ul style="list-style-type: none"> • <i>Entrepreneurship</i> in the use of multimedia. • <i>Productivity</i> in the use of multimedia. • <i>Efficiency</i> in the use of

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUE
		9.9.2.1 Record video and audio 9.9.2.2 Save video and audio files	enhancing scanned and digitised images (Include: cropping, enhancing pixels, colour etc) <ul style="list-style-type: none"> • Saving images with appropriate file extensions • Recording Video and Audio using digital camera and/ or microphone • Naming audio and video files with appropriate file extension • Appreciate the different media file extensions • Understanding the syntax of media file naming 	names and file extensions <ul style="list-style-type: none"> • Recording video and audio using multimedia related technology • Naming audio and video files with appropriate file names and extension. 	multimedia. <ul style="list-style-type: none"> • Inquisitiveness in the use of multimedia.

Grades 8 and 9 Computer Studies Scope and Sequence

The table below shows the coverage of the syllabus in Computer Studies in Grades 8 and 9. It is important for a teacher to refer to this table from time to time to know the knowledge that the learners already have or need to have at various levels of learning of the subject.

TOPIC	KNOWLEDGE	
	GRADE 8	GRADE 9
<ul style="list-style-type: none"> • Introduction to Computer Studies 	<ul style="list-style-type: none"> • Parts of a computer • Input-process-output operations 	<ul style="list-style-type: none"> • Peripheral devices • Input-process-output operations
<ul style="list-style-type: none"> • Basic Operations 	<ul style="list-style-type: none"> • Health and safety • Care for Computer Systems • Computers and peripherals • Security and Viruses • Types of user interfaces 	<ul style="list-style-type: none"> •
<ul style="list-style-type: none"> • Generic Application Software 	<ul style="list-style-type: none"> • Introduction to Windows • Key in and Edit Text • Manipulation and Formatting • Proof Reading • Print Preview and Printing • Saving Files • Drawing Simple Graphics 	<ul style="list-style-type: none"> • Keyboard skills • Document setup and layout • Search and replace • Copying text from other document windows • Pagination • Page formatting • Finding and file retrieval
	<ul style="list-style-type: none"> • Introduction to Spreadsheet • Entering and editing data • Adding Formula • Saving and Printing 	<ul style="list-style-type: none"> • Amending a spread sheet • Formatting cells • Sorting data • Entering and applying formula • Charts

TOPIC	KNOWLEDGE	
	GRADE 8	GRADE 9
	<ul style="list-style-type: none"> • Publishing basics and Features • Pre-designed layouts or Templates • Fonts • Elementary Graphics • Colours and Fonts • Clip art/Re-designed graphics 	<ul style="list-style-type: none"> • Charts, Diagrams and pictures • Text wrapping • Importing Text • Manipulation of pre-designed templates • Colours and Fonts
<ul style="list-style-type: none"> • Networks and the Internet 	<ul style="list-style-type: none"> • Rationale of networking computers in different locations. • Difference between Wired and wireless networks • Local area network (LAN), and a Wide area network (WAN) • Uploading and downloading text, image, audio and video files • Searching the web for specific information. • Identifying web browsers as a tool to accessing web pages on the internet • Web browser and the Universal Resource Locator (URL) • Search engines • The email. 	<ul style="list-style-type: none"> • Outline the advantages of group working • Understanding of the network terminologies. • The intranet and an extranet • The World Wide Web and the internet • Components of Universal Resource Locator (URL) • Stopping a web page from downloading • Refreshing, move back and forward • Services available on the Internet.
<ul style="list-style-type: none"> • Systems and Communications 	<ul style="list-style-type: none"> • Introduction to multimedia files • Graphics • Video and Audio 	<ul style="list-style-type: none"> • Digitising images • Video and Audio
<ul style="list-style-type: none"> • Computer Application 	<ul style="list-style-type: none"> • Household, Entertainment and recreation appliances • Office Equipment • Industrial and Commercial Applications of computers • Computer based learning 	<ul style="list-style-type: none"> • Household appliances • Computer based learning (CBL) • Computers in banking and e-commerce • Point of Sale • Magnetic cards and smart cards
<ul style="list-style-type: none"> • Social and Economic Implications of the use of Computers 	<ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Unresponsive computer • Security and Viruses • Copyright • Storage media

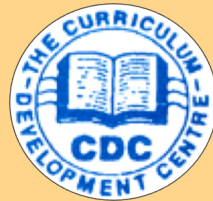


Republic of Zambia

Ministry of Education, Science, Vocational Training and Early Education

COMPUTER STUDIES SYLLABUS

GRADES 10 TO 12



Prepared and Published by the Curriculum Development Centre
P.O. Box 50092
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VISION

Quality, lifelong education for all which is accessible, inclusive and relevant to individual, national and global needs and value systems.

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PREFACE

The syllabus was produced as a result of the Curriculum review process carried out by the Ministry of Education, Science, Vocational Training and Early Education under the auspices of the Curriculum Development Centre (CDC). The curriculum reform process started way back in 1999 when the Ministry of Education commissioned five (5) curriculum studies which were conducted by the University of Zambia. These studies were followed by a review of the lower and middle basic and primary teacher education curriculum. In 2005 the upper basic education National survey was conducted and information from learners, parents, teachers, school managers, educational administrators, tertiary institutions traditional leaders civic leaders and various stakeholders in education was collected to help design a relevant curriculum.

The recommendations provided by various stakeholders during the Upper Basic Education National survey of 2005 and National symposium on curriculum held in June 2009 guided the review process.

The review was necessitated by the need to provide an education system that would not only incorporate latest social, economic, technological and political developments but also equip learners with vital knowledge, skills and values that are necessary to contribute to the attainment of Vision 2030.

The syllabus has been reviewed in line with the Outcome Based Education principles which seek to link education to real life experiences that give learners skills to access, criticize analyse and practically apply knowledge that help them gain life skills. Its competences and general outcomes are the expected outcomes to be attained by the learners through the acquisition of knowledge, skills, techniques and values which are very important for the total development of the individual and the nation as a whole.

Effective implementation of Outcome Based Education requires that the following principles be observed: clarity of focus, Reflective designing, setting high expectations for all learners and appropriate opportunities.

It is my sincere hope that this Outcome Based syllabus will greatly improve the quality of education provided at Grade 10 to 12 level as defined and recommended in various policy documents including Educating Our Future 1996 and the Zambia Education Curriculum Framework 2013.



Chishimba Nkosha
Permanent Secretary
MINISTRY OF EDUCATION, SCIENCE, VOCATIONAL TRAINING AND EARLY EDUCATION.

ACKNOWLEDGEMENT

The syllabus presented here is a result of broad-based consultation involving several stakeholders within and outside the education system.

Many individuals, institutions and organizations were consulted to gather their views on the existing syllabus and to accord them an opportunity to make suggestions for the new syllabus. The Ministry of Education wishes to express heartfelt gratitude to all those who participated for their valuable contributions, which resulted in the development of this syllabus.

The Curriculum Development Centre worked closely with other sister departments and institutions to create this document. We sincerely thank the Directorate of Teacher Education and Specialized Services, the Directorate of Planning and Information, the Directorate of Human Resource and Administration, the Directorate of Open and Distance Education, the Examinations Council of Zambia, the University of Zambia, Copperbelt University, schools and other institutions too numerous to mention, for their steadfast support.

We pay special tribute to co-operating partners especially JICA and UNICEF for rendering financial and technical support in the production of the syllabus.



C.N.M Sakala (Mrs.)

Director-Standard and Curriculum

MINISTRY OF EDUCATION, SCIENCE, VOCATIONAL TRAINING AND EARLY EDUCATION

RATIONALE

Computer Studies is about how computers compute. It is much more than computer programming. Computer Studies is the study of ways of representing objects and processes. It involves defining problems; analysing problems; designing solutions; and developing, testing, and maintaining programs. The term Computer Studies refers to the study of Computer Studies, meaning computer and algorithmic processes, including their principles, hardware and software designs, their applications, and the impact they have on society.

The major focus of this subject is the development of programming skills, which are important for success in future postsecondary studies. Computer Studies is relevant for all students because it incorporates a broad range of transferable problem-solving skills and techniques, including logical thinking, creative design, synthesis, and evaluation. It also teaches generically useful skills in such areas as communication, time management, organization, and teamwork.

Computer Studies will provide students with the knowledge and skills to understand the underpinnings of current computer technology and prepare them for emerging technologies. A foundation in this discipline will introduce students to the excitement and opportunities afforded by this dynamic field and will begin to prepare them for a range of rewarding careers.

The subject will build a strong foundation for those who wish to move on to further study and training in specialized areas such as computer programming, database development and analysis, education, computer engineering, software engineering, information technology, and game development.

GENERAL OUTCOMES

- To build a strong foundation for further study and training in specialized areas such as computer programming, database analysis, education, computer engineering, software engineering, information technology, and game development.
- To act as an electronic tool for learning other subjects and learning areas.

Key Competences

- **Understand and apply requirements of Computer Studies ethics and security.**
Learners are expected to be competent in applying the new knowledge so acquired in advancing their daily lives of those of others. They should be able to use computer related software, gadgets and appliances without difficulty. They should also be able to understand the language that is normally used in programming.

Awareness of the risks of using the computer is also important at this level. Software and hardware security is also of great importance at this level.

- **Share their knowledge and skills through the internet**

The Internet is a very powerful media of communication nowadays. After learning CS learners should be able to find useful information using the Internet. They should also be aware of the dangers of using the Internet. The correct use of email addresses for formal communications purposes is vital and. Collaborate and share knowledge and ideas with others.

- **Create simple programs to help the school achieve its goals and other advertisement materials for the school events.**

Learners are expected to be conversant in using multimedia software at this level of education. Learners should be able to correctly use word processing and presentation software.

- **Carry out a simple system design and analysis**

To enhance their understanding at this level learners will be expected to carry out simple system analysis and design in a programming language of their choice.

TEACHING METHODOLOGY

Computer Studies Syllabus offers a wide perspective of the subject. It gives more insights to the Junior Secondary Computer Studies syllabus, bringing to the fore Computer application and its impact on society. Computer Studies will be learnt within the context of application. As such, activities, projects and problem solving that replicate real life will form an integral part of the teaching and learning methodologies.

The Senior Secondary School Computer Studies syllabus is meant to prepare learners for further studies, the world of work (through application), further education within the discipline and lifelong learning. Computer Studies is extremely dynamic and significantly always impacting on the way we live. Learners should be made to appreciate the constantly changing computer technology and its complexities if they are to become competitive citizens in today's globalised world.

Using computers is an essential part of the study of Computer Studies. Use of computers in Computer Studies facilitates the understanding of and Computer Studies processes and inquiry. Using computers can enhance learning opportunities for a wide range of learners because it caters for a variety of learning and teaching styles.

Principles and procedures

Learners need to develop skills to help them learn. Skills development should happen as a part of learners' learning experiences and the learning and practising of skills needs to occur in the context of units being taught.

Learning of Skills tends to be most effective when:

- learners go from the known to the unknown
- learners understand why it is necessary to gain mastery of specific skills
- skills are developed sequentially at increasing levels of difficulty
- learners identify and analyse the components of the skill
- there are frequent opportunities for practice and immediate feedback possibly frequent use of computer or computer embedded gadgets or tools.
- the skills being taught are varied in terms of amount and type, according to the needs and ability of learners

To teach skills effectively, a teacher needs to include learning activities that span from teacher-directed to student-centred learning, use groups of different sizes ranging from the whole class to small groups and use a range of teaching strategies which use higher-order skills as learners' progress.

Teaching and Learning Strategies for Computer Studies

Teaching and learning strategies for Computer Studies shall include:

Brainstorming - to stimulate creative thinking, Consequence charts - Cause and effect approach, Classroom displays (focuses on the current unit), Charts, Flow charts, Diagrams, Evaluation, Discussion, Guest speaker or visitor, educational tours and visits, Models, Photographs and pictures, Presentations, Problem solving - Learners are involved in identifying and working towards solutions, Reflective learning - thinking about what has been learnt, Research - to think of the questions you want learners to answer, and Project work.

Software

Throughout the course the recommended Operating System (OS) is Microsoft Windows 7[®] or later versions. Microsoft Office 2010[®] or later versions will also be assumed for use to demonstrate word processing (Word), spread sheets (Excel), multimedia, and databases (Access). The programming compilers to be used are Turbo Pascal for Windows, C++ for Windows or Visual Basic (Minimum 6.0 Version), or Python or Java.

Pascal programming language is a powerful tool for teaching programming language because of its:

1. **Built in Data Types.** This means that the Pascal programming language contains its own built in data types of Integer, Real, Character, and Boolean.

2. **User defined Data Types**, which gives Pascal the ability to define scalar, types as well as subranges of those data types.
3. **Provision for a defined set of Data Structures**. This means that data structures include Arrays, Records, Files and Sets.
4. **Strong data typing element**. This means that Pascal compilers can diagnose an incompatible assignment of one type to a variable to another type.
5. **Support for Structured Programming**. This is accomplished through the use of subprograms called procedures and functions.
6. **Simplicity and Expressiveness**. The language is simple and expressive in nature and it allows for effective teaching of computer programming techniques.

TIME AND PERIOD ALLOCATION

This syllabus covers a three-year course in Computer Studies and will require at least four 40-minute periods per week to complete (one double for practical and two single periods for theory). Sequence of the syllabus does not necessarily dictate the order in which topics are to be taught.

ASSESSMENT SCHEME

The assessment framework utilises various types of continuous assessment strategies. This is meant to determine learners' competences in the CSt. outcomes presented here. It is desired that the teacher utilise assessment strategies that promote active learning by the learner. The case in point includes portfolios, observation sheets (to gauge certain competences), written assignments and reports, presentations, projects and experiments.

Computer Studies is a practical subject and as such this syllabus places a lot of emphasis on the use of common programming languages. Simple object oriented programming languages may be examined at this level. It is therefore the schools' responsibility to ensure that relevant programming software, compilers, equipment and facilities needed by learners to meet the minimum requirements for assessment purposes are acquired.

The teacher may teach learners to dry run simple programs before they actually compile and run them on a compiler. The teacher may choose a programming language for the learners depending on the availability of such 4th generation programming language (4GL). However for uniformity purposes the syllabus assumes such programming languages as Turbo Pascal for Windows, C++, Visual Basic, Python or Java.

The final assessment of Computer Studies is divided into two sections.

1. Theory (Paper 1) - (External assessment by the examination board): 70%

2. Practical (Paper 2) - (External by the Examination board): 30%

Test Design

Structure

The grade 12 Examination will consist of two papers. Computer Studies Paper 1 (Theory) and Computer Studies Paper 2 (Practical).

Summary:

Paper	Paper Type	No. Of Questions	Total Marks	Duration	Weighting
Paper 1	Theory (Structured & Essay Type)	15	70	2Hrs 30 Min	70%
Paper 2	Practical (Structured Responses)	2	30	1hr 30 Min	30%
		TOTAL	100		100%

Paper 1(Theory)

This paper will focus on knowledge, comprehension, application, analysis, synthesis and evaluation skills.

Paper 2 Practical (1hour 15 minutes)

This paper will focus on knowledge, comprehension, application, analysis, synthesis and evaluation skills.

Focus

Paper 1

Computer Studies Paper 1 will consist of two sections A and B. **Section A** will consist of **13 structured questions** giving a total of **50 marks** and **Section B** will have two questions, **one (1) Essay type question** from a real life scenario and **one (1) structured question** consisting of several parts. The total marks for section B is 20 marks. The Duration of Paper 1 is **2 hours 30 minutes**.

Paper 2 Content Distribution

Computer Studies Paper 2 will be a hands-on practical consisting of two questions each carrying **15 marks from Generic Software and Applications** giving a total of **30 marks**. The Duration for Paper 2 is **1 hour 30 minutes**.

Weighting

The two Computer Studies question papers contain the following distribution of marks across the five Assessment Objectives (AOs) as shown in the table below:

Note: The weighting relates to the mark for each paper to the actual percentage as a whole paper.

Paper 1	AO1	Knowledge and Comprehension	30%	70%
	AO2	Application	19%	
	AO3	Analysis	13%	
	AO4	Synthesis	5%	
	AO5	Evaluation	3%	
Paper 2	AO1	Knowledge and Comprehension	10%	30%
	AO2	Application	14%	
	AO3	Analysis	7%	
	AO4	Synthesis	7%	
	AO5	Evaluation	2%	
			100%	100%

Test Content

Grade 12 computer Studies examinations will have three question types. These are structured and essay type of questions.

Question Types

Theory

Structured

Structured questions will require candidates to supply responses in the form of phrases, definitions, comparisons by filling in the blank spaces provided.

Short Essay

Short essay type questions will require candidates to write a summary of key areas and activities of a given scenario.

Practical

The practical will require candidates to follow a set of instructions using a computer to obtain required results. The results of the practical questions will be printed out by each candidate.

Curriculum Coverage

The questions in **Paper 1** and **Paper 2** will cover the entire syllabus from Grade 10 to Grade 12. The skills to be tested will range from Knowledge to Evaluation of the cognitive domain of Bloom's taxonomy.

Table 1: Distribution of marks in Papers 1 and 2 according to Bloom's Taxonomy.

Cognitive Domain	Knowledge and Comprehension	Application	Analysis	Synthesis	Evaluation	Total
Paper 1: Number of Marks	21	20	15	9	5	70
Paper 2: Number of Marks	6	10	7	5	2	30
						100

GRADE 10

General Outcomes

- Promote an appreciation of the range and power of computer application
- Develop an interest, confidence and enjoyment in the use of computers

Key Competences

- Appreciate Computer career opportunities
- Develop interest in the use of Application Software
- Appreciate Programming languages and terminology in programming
- Develop interest in Data Representation and processing
- Develop in understanding in Hardware of the computer system
- Understand the importance of Operating systems and file management
- Prepare and use Presentation Packages
- Appreciate General computer applications
- Awareness of Computer Security

GRADE 10 SYLLABUS

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
10.1 Computer career opportunities	10.1.1. Careers in ICT 10.1.2. Further Educational opportunities	10.1.1.1 Describe different careers in ICT. 10.1.1.2 Identify opportunities for further education	<ul style="list-style-type: none"> Careers in ICT(Include: Computer operator, Programmer , Software engineer, Web Designer, Computer Technician) Further education (colleges, polytechnics, universities, and research institutions) 	<ul style="list-style-type: none"> Interpretation of ICT careers Identification of opportunities for further education. 	<ul style="list-style-type: none"> Appreciation of ICT careers Awareness of ICT careers Inquisitiveness in ICT jobs and careers.
10.2 Application Software	10.2.1 Generic Application Software.	10.2.1.1. Understand the difference between application and system software. 10.2.1.2. Understand how generic application software may be customised by the use of macros and formulae 10.2.1.3. Appreciate the advantages and disadvantages of generic application software compared with bespoke software 10.2.1.4. Classify types of software 10.2.1.5. Outline the usage of different types of software 10.2.1.6. Distinguish between integrated and stand-	<ul style="list-style-type: none"> Difference between application and system software. Word processing and desktop publishing programs Features of Spread sheet programming (Include: logical conditions e.g. IF (C5>300, C5*5%, “No Discount”), IF (Mark > 85, “Distinction”) Use of different types of software (Include: Special purpose application packages for people with special needs) Integrated and stand-alone software Off- the-shelf and in- house software 	Differentiation between application and system software Application of features of spreadsheet. Appreciation of disadvantages and advantages of application software.	Inquisitiveness in the use of logical conditions in spreadsheet. Teamwork in the application of spreadsheet and use of logical conditions. Understanding between application and system software.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		10.2.1.7. Distinguish between off-the-shelf and in-house software.			
10.3 Programing and Pseudo algorithms	10.3.1. Programming languages 10.3.2. Program Structure 10.3.3. Programming Reserved Words 10.3.4. Data Types	10.3.1.1 Illustrate the concept of Programming languages 10.3.2.1 Identify program structure 10.3.3.1 Identify programing reserved words in a Programming language (Include: Reserved words in Pascal version 7 and C++ for Windows 7 or 8) 10.3.4.1. Identify Pre-defined Data Types 10.3.4.2. Create User Defined Data types 10.3.4.3. Declare the variables 10.3.4.4. Code simple programs in a programming language (Include: Pascal and/ or C++)	<ul style="list-style-type: none"> • Concept of Programming languages • Program Structure (Include: Program name, variable declaration, beginning, main body, ending) • Use of reserved words in Pascal and C++. • Pre-defined data types • User-defined Data types • Types of variables (Include: Real, integers, character, Boolean) • Simple programs in a chosen programming language. (Consider from Pascal and/ or C++) 	<ul style="list-style-type: none"> • Manipulations • Identification of reserved words • Problem Solving in programming. • Modelling in finding a solution to a program. • Matching numbers to data type. • Debugging of a computer program. • Application of computer programming to solving simple mathematical and physics problems. 	<ul style="list-style-type: none"> • Appreciation of programming. • Awareness of reserved words in programming. • Logical Thinking in programming computer.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
10.4 Data Representation and processing	10.4.1. Data and information	10.4.1.1 Explain the difference between Data and information	<ul style="list-style-type: none"> • Difference between Data and information • Methods of data collection and preparation • Analogue-to-digital converters and digital-to-analogue conversion. • Data representation. • Reasons of data representation • Data storage/capacity (Include: bit, byte) • Number systems and their representation of integral values (decimal, binary, octal and hexadecimal • Binary addition and subtraction and their use in computing • Data processing cycle, errors and data integrity • Types of computer processing file • Electronic data processing modes 	<ul style="list-style-type: none"> • Addition and subtraction of binary numbers. • Modelling/analysis of data and information. • Discrimination between data and information • Trouble shooting when converting of analogue to digital and digital to analogue • Interpretation of data and information. 	<ul style="list-style-type: none"> • Appreciation of storage capacity • Problem solving converting of analogue to digital and digital to analogue • Accuracy in conversions of data • Critical and analytical thinking in the presentation of data.
	10.4.2. Data collection and preparation	10.4.2.1 Describe and select methods of data collection and preparation			
	10.4.3. Analogue-to-digital converters and digital-to-analogue converters.	10.4.3.1 Describe analogue-to-digital converters and digital-to-analogue conversion.			
	10.4.4. Types of data representation	10.4.4.1. Describe concepts of data representation			
	10.4.5. Binary arithmetic operations.	10.4.4.2. Outline reasons for data representation			
		10.4.4.3. Describe the terms for data storage/capacity			
		10.4.4.4. Explain the number systems and their representation of integral values			
		10.4.5.1. Demonstrate binary addition and subtraction and their use in computing			
		10.4.5.2. Explain data processing cycle			
	10.5 Hardware of the computer system	10.5.1. Main hardware components of a			

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
	general-purpose computer 10.5.2. Computers and processing power 10.5.3. Input devices and their uses 10.5.4. Output devices and their uses	10.5.1.2. Demonstrate usage of each input device 10.5.2.1. Describe the elements of input stage 10.5.2.1. Identify the registers 10.5.2.2. Demonstrate the principle of fetch – execute cycle 10.5.4.1. Identify types of output devices 10.5.4.2. Distinguish between the various types of output devices	keyboard, scanner , OCR , MICR,OMR, Special purpose input devices for people with special needs) and their usage. <ul style="list-style-type: none"> • Elements of process stage (memory , control unit , arithmetic and logic unit—ALU) • Types of registers • Principle of fetch – execute cycle • Types of output devices(printer ,Monitor, LCD projectors, Special purpose out devices for people with special needs) 	components of a computer system. <ul style="list-style-type: none"> • Inputting data • Identification of different components of computer system hardware. • Demonstration on the use of computer system hardware • Distinguishing between various types of input 	<ul style="list-style-type: none"> • thinking on how connected the hardware is in a computer system. • Problem solving in fetching and executing of a cycle.
10.6 Operating systems and file management	10.6.1. Types of operating systems 10.6.2. User interface 10.6.3. File management 10.6.4. Peripheral device control	10.6.1.1. Describe types of operating systems 10.6.1.2. Outline different types of operating systems 10.6.1.3. Describe the functions of operating systems 10.6.2.1. Describe different types of user interface 10.6.1.4. Describe types of file organisation and access 10.6.1.5. File management 10.6.4.1. Explain how folders are structured and	<ul style="list-style-type: none"> • Types of operating system (Include: Command line , Graphic User Interface-GUI) • Different types of operating systems • Functions of operating system (Include: task scheduling, memory management, control of input/output) • Different types of user interface • File organisation and 	<ul style="list-style-type: none"> • Discrimination of operating systems • Problem solving in the using of peripheral devices • Identification of functions of operating systems. • Application of computer peripherals • Appreciation of 	<ul style="list-style-type: none"> • Maintenance of Data integrity • Responsibility in the use of peripherals. • Awareness of data integrity. • Inquisitiveness in the use of operating systems.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		10.6.4.2. how folders and files can be managed Describe how the operating system communicates with peripheral devices and maintains data integrity.	access(Include: sequential, direct, random, and serial) <ul style="list-style-type: none"> Principles of backing up data (backup, restore) Managing folders and files Communication between operating system and peripheral devices and maintenance of data integrity. 	user interface. <ul style="list-style-type: none"> Identification of communication between operating system with peripheral devices and maintenance of data integrity. 	
10.7 Presentation Packages	10.7.1. Introduction to Presentation Packages 10.7.2. Creating slides 10.7.3. Adding animations to slides 10.7.4. Formatting Slides	10.7.1.1 Illustrate the general features of a Presentation Package 10.7.2.1 Demonstrate the various methods of creating slides 10.7.3.1 Describe the steps in adding animations to slides 10.7.4.1 Demonstrate how to format slides	<ul style="list-style-type: none"> Features of a Presentation Package Various methods of creating slides. Adding animations to slides. Formatting slides. 	<ul style="list-style-type: none"> Manipulation of presentation packages Identification of steps needed to create slides. Discrimination Ordering slides Presentations using presentation package 	<ul style="list-style-type: none"> Problem solving in making presentations Logical thinking in animating presentations. Productivity Accuracy in formatting slides.
10.8 General computer applications	10.8.1. Communication in systems 10.8.2. Information systems in industries	10.8.1.1 Demonstrate an understanding of computer applications in a home environment, offices, commercial environment communication and information systems, commercial	<ul style="list-style-type: none"> Application of computers in a home environment (Include: washing machines, Entertainment appliances), offices (Communication- Internet and Intranet), commercial environment (include: - point of sale, stock controls, traffic 	<ul style="list-style-type: none"> Identification of computer applications in homes, offices and commerce. Interpretation of use of computer systems Problem solving in finding a 	<ul style="list-style-type: none"> Appreciation of communication and information systems. Critical and analytical thinking in the use of computer systems in a home and

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		10.8.2.1 Identify general data processing, industrial, technical and scientific uses.	<ul style="list-style-type: none"> control) and in training. Data processing, industrial, technical and scientific uses. 	suitable application system for a specific task. <ul style="list-style-type: none"> Application of communication and information systems in a home and workplace. 	information
10.9 Computer Security	10.9.1. Security Policies and terminology 10.9.2. Security awareness and Concerns	10.9.2.1. Describe security policy 10.9.2.2. Describe security terminologies 10.9.2.3. Describe systems security methods. 10.9.2.1. Describe and resolve various security concerns towards resources 10.9.2.2. Identify computer security Professionals 10.9.2.3. Explain the responsibility of computer security professionals	<ul style="list-style-type: none"> Security terminologies System Security policy structure Security terminologies Resources (Assets) that require security Various security concerns towards resources (Include: Hardware, human error, power failures, disasters, viruses, unauthorised access, theft, loss of storage devices) Computer security professionals Responsibilities of computer security personnel 	<ul style="list-style-type: none"> Identification of security layers. Comparing and contrasting security layers Implementation of security measures Application of security to computers and peripherals. 	<ul style="list-style-type: none"> Appreciation of security layers Awareness of security professionals. Problem solving Responsibility computer and data security. Inquisitiveness in the security measures of a computer system.

GRADE 11

General Outcomes

- Develop an ability to solve problems using computing techniques and programming
- Develop an awareness on the relevance of computing in contemporary society and issues brought about by computer usage
- Gain firm understanding of basic techniques and knowledge required for computer application
- Foster a desire to use computers within professions.

Key Competences

- Apply appropriate Programming and Pseudo Code Algorithms
- Develop an awareness of importance of logic gates, circuits
- Foster desire to develop and design Websites
- Gain firm understanding to Networks and Data Communication
- Appreciate Computer systems
- Use and understand Databases
- Appreciate need for Specific computer applications
- Appreciate Social and economic impact of computers

GRADE 11 SYLLABUS

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
11.1 Programming and Pseudo Code Algorithms	11.1.1 Computer programming	11.1.1.1 Identify Programming terminology .	<ul style="list-style-type: none"> Programming terminology (E.g. in Pascal, Visual Basic, C++, Java or Python (Include: assembler, compiler, interpreter, add, subtract, multiply, divide, calculate) Algorithm for a given problem in pseudocode using a variety of structures and the concepts of totalling and counting. Loops and decision making in a program i.e. conditions and iterations statements (Include: Repeat ... until; if ... then ...else, ... endif, case...of ... otherwise ... endcase, while... do ... endwhile, for ... end for) Dry run with a trace table and test data to understand the behaviour and Work out the purpose of a pseudocode algorithm. Trace table for pseudocode. 	<ul style="list-style-type: none"> Identification of reserved words Debugging of a computer program. Application of computer program Manipulation of programming languages Identification of components of a programming language 	<ul style="list-style-type: none"> Productivity in the use of programming languages Creativity in programming.
	11.1.2 Pseudocodes	11.1.1.2 Produce an algorithm for a given problem in pseudo code using a variety of structures and the concepts of totalling and counting 11.1.1.3 Produce loops and decision making in a program. 11.1.1.4 Dry run with a trace table and test data to understand the behaviour of code. 11.1.2.1 Work out the purpose of a pseudo code algorithm. 11.1.2.2 Construct trace table for pseudo codes.			
11.2 Logic gates, circuits	11.2.1. Logic gates and circuits and truth tables. 11.2.2.	11.2.1.1 Define functions of five types of logic gates. 11.2.1.2 Recognise logic gates	<ul style="list-style-type: none"> Elements of logic gates Five types of logic gates (Include: AND, OR , NOR , NAND , NOT and the 	<ul style="list-style-type: none"> Problem solving in the use of logic gates Demonstration 	<ul style="list-style-type: none"> Entrepreneurship in creating simple websites. Accuracy in the

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
	11.2.3. Introduction to Web site Design and Development	<p>and their symbols and two ways of representing them.</p> <p>11.2.1.3 Write a truth table for a given gate and recognise a gate from its truth table</p> <p>11.2.1.4 Produce a truth table for a given logic circuit</p> <p>11.2.1.5 Design a simple logic circuit to provide a solution to a written logical statement of a problem.</p> <p>11.2.2.1. Create Web Pages using templates (Include: HTML and Design windows in Dreamweaver, WordPress).</p> <p>11.2.2.2. Import text and pictures in a web designer.</p> <p>11.2.2.3. Use Flash to animate files and pictures in websites.</p>	<p>binary output produced from all possible binary inputs.)</p> <ul style="list-style-type: none"> • Ways of representing the logic gates • Truth tables for a given gate. • Logic circuits (Include: Combinational logic circuits with two or three inputs only) • Web Pages • Text and pictures in a web designer. • Flash to animate files and short videos in websites. 	<p>on creating web pages using Dreamweaver.</p> <ul style="list-style-type: none"> • Appreciation of web designing. • Previewing a web site design. 	<p>use of logic gates.</p> <ul style="list-style-type: none"> • Inquisitiveness in the use of web designing software. • Modelling in finding a solution to a program.
11.3 Website design and development	11.3.1. Introduction to Web site Design and Development	<p>11.3.1.1. Create Web Pages using templates (Include: HTML and Design windows in Dreamweaver, Word Press).</p> <p>11.3.1.2. Import text and pictures in a web</p>	<ul style="list-style-type: none"> • Web Pages • Text and pictures in a web designer. • Flash to animate files and short videos in websites. 	<ul style="list-style-type: none"> • Demonstration on creating web pages using Dreamweaver. • Appreciation of web designing. • Previewing a web site design. 	<ul style="list-style-type: none"> • Entrepreneurship in creating simple websites. • Accuracy in the use of logic gates. • Inquisitiveness in the use of web designing

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		designer. Use Flash to animate files and pictures in websites.		<ul style="list-style-type: none"> • 	software. <ul style="list-style-type: none"> • Modelling in finding a solution to a program.
11.4 Networks and Data Communication	11.4.1. Networks Purpose and limitations	11.4.1.1 Define computer networks and data communication	<ul style="list-style-type: none"> • Computer networks and data communication • Purpose (include: resource sharing, remote communication, distributed processing facilities, cost effectiveness and reliability) • Limitations of networking • Elements of a Networks-Data communication media (cables and wireless), Data signal (digital and analogue), Communication devices (Include: modems, network cards and hubs) and Network software (operating systems and protocols) • Network topologies (Include: star, bus and ring) • Analogue-to-digital converters and digital-to-analogue converters • Intranet and Internet security • Recent developments in the use of the Internet. 	<ul style="list-style-type: none"> • Interpretation of various networks • Identification digital converters. • Awareness of data protection legislation. • Awareness of recent developments in the use of the Internet. • Application of networks to communicate 	<ul style="list-style-type: none"> • Appreciation of the use of networks. • Inquisitiveness of use of networks. • Understanding of various networks and topologies
	11.4.2. Elements of Networking	11.3.1.2 Explain the purpose and limitations of networks			
	11.4.3. Network topologies	11.4.2.1 Identify the elements of Networks			
	11.4.4. Digital converters	11.4.3.1 Describe network topologies (Include: Star, Bus, Ring, Mesh, Tree)			
	11.4.5. Data protection	11.4.4.1 Converting analogue-to-digital converters and digital-to-analogue converters			
	11.4.6. Online crimes	11.4.5.1 Demonstrate data protection legislation			
	11.4.7. Intranet and Internet security	11.4.6.1 Identify Computer crime 11.4.7.1 Identify Intranet and Internet security.			

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
11.5 Computer systems	11.5.1. Types of computer systems	11.5.1.1. Distinguish between types of computer system	<ul style="list-style-type: none"> Types of computer system (Include: Batch processing systems, interactive systems, control systems, automated systems). Information system for on-line services and remote databases. Monitoring and control systems Automation and robotics applications Expert systems and artificial intelligence Management of computer systems. 	<ul style="list-style-type: none"> Identification of databases and their use. Awareness of databases concepts. Appreciation of multimedia systems. Problem solving in management of computer system. 	<ul style="list-style-type: none"> Inquisitiveness in web browsers and their use. Productivity in the use of web browsers and search engines. Appreciation of expert and artificial intelligence. Understanding of automation and robotics application. Inquisitiveness in automation and robotics. Curiosity in expert systems and artificial intelligence.
	11.5.2. Monitoring and control systems	11.5.1.2. Illustrate what is needed to support various types of computer system			
	11.5.3. Automation and robotics applications	11.5.1.3. Explain the most suitable type of computer system for a given application.			
	11.5.4. Expert systems and artificial intelligence	11.5.2.1. Describe monitoring and control systems			
	11.5.5. Management of computer systems.	11.5.2.2. Describe the automation and robotics applications			
	11.5.3.1 Explain information systems for on-line services and remote databases				
	11.5.4.1 Describe expert systems and artificial intelligence				
	11.5.5.1 Describe problems in the managements of computer systems.				
11.6 Databases	11.6.1. Design Databases	11.6.1.1. Build a database	<ul style="list-style-type: none"> Databases (Include: creating a new data base, new table, auto number field, fields, primary key, tables, records, reports) Data entry and edit Relationships (Include: Making the relationship, Form wizard, checking 	<ul style="list-style-type: none"> Application of databases and multimedia systems. 	<ul style="list-style-type: none"> Inquisitiveness in use of databases. Curiosity in the use of databases.
	11.6.2. Manipulating databases	11.6.1.2. Illustrate Data entry and edit			
		11.6.1.3. Searching for records			
		11.6.1.4. Describe Relationships			
		11.6.1.5. Designing and redesigning a database form.			

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		11.6.2.1. Generate database reports. 11.6.2.2. Describe Database security.	relationships) • Database form. (Include: design view • Tables (Include: Adding and deleting fields) • Databases (Include: sorting, filtering, copying and moving records, creating and running queries) • Generating database reports (Include: Using wizards) • Printing reports and labels. • Database security.(Include: security, confidentiality, data integrity) • Threats to data security.		
11.7 Social and economic impact of computers	10.7.1. Effects of Computer use on people and organisation 10.7.2. Maintenance of integrity of data and privacy. 10.7.3. Data protection legislation. 10.7.4. Threats to computer security and measures to combat them.	10.7.1.1. Introduction to understanding of some social and economic effects of computer use on people and organisations 10.7.1.2. Demonstrate an understanding of some social and economic effects of computer use on people and organisation 10.7.1.3. Describe measures to maintain integrity of data and privacy. 10.7.1.4. Describe features	• Social and economic effects of computer use on people and organisation (include: emissions, pollution, job loses and gains, health issues, cultural implications) • Data integrity and privacy. • Data protection • Computer Crime • Threats to security and measures to combat them (Include: hacking and other computer crime, computer viruses, internet security).	• Differentiation of risk threats and controls. • Implementation of security systems. • Planning security for a system. • Awareness of security and access to computer systems.	• Appreciation of security controls. • Security consciousness • Security management of the systems. • Inquisitiveness in keeping hackers away from computer systems.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		<p>expected in data protection legislation.</p> <p>10.7.1.5. Demonstrate an understanding of threats to security and measures to combat them.</p>			
11.8 Specific computer applications	<p>11.8.1. Social and Commercial applications of computers</p> <p>11.8.2. Office automation</p> <p>11.8.3. Commercial and general data processing.</p>	<p>11.8.1.1 Describe the use of computers in education, health agricultural, banking and financial institutions, retailing, industry. Library systems, and transport.</p> <p>11.8.2.1 Identify Office automation</p> <p>11.8.3.1 Define Commercial and general data processing.</p>	<ul style="list-style-type: none"> • Computers in education (Include: e-learning, e-books, on-line application) • Computers in health (Include: medical expert systems, tele-medicine, health research, record keeping, medical diagnosis) • Computers in banking (Include: Electronic fund transfer, automated teller machines, credit cards, online banking) • Computers in retailing (Include: electronic point of sale, stock management.) • Library systems. <ul style="list-style-type: none"> • Office automation • Define Commercial and general data processing. 	<ul style="list-style-type: none"> • Application of computers in library systems. • Searching for books using a library system • Researching in commercial and general data processing. • Application of computers in retailing. • Understanding of computer systems in library and retailing. 	<ul style="list-style-type: none"> • Appreciation of use of computer system in a library. • Awareness of use of computers in a library. • Entrepreneurship in tracking of sales using a computer system. • Problem solving in a library system and banking. • Innovativeness in the use of computers in a data processing system.

GRADE 12

General Outcomes

- Develop an ability to solve problems using computing techniques and methods.
- Develop an awareness on the relevance of computing in contemporary society and issues brought about by computer usage
- Gain firm understanding of basic techniques and knowledge required for computer application
- Foster a desire to use computers within other professions

Key Competences

- Apply appropriately search techniques such as Boolean logic, use of advanced search features.
- Apply knowledge and skills using software/ programming to solve databases, graphics, web pages and software development.
- Be innovative by using appropriate software in problem solving
- Apply Algorithms in programming
- Appreciate Programming and Structure Query language (SQL)
- Apply system life cycle to develop a Computer Project
- Appreciate different Types of computer systems
- Collaborate and share knowledge and ideas with others.

GRADE 12 SYLLABUS

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
12.1 Algorithms	12.1.1 Algorithm planning and design	12.3.1.1. Describe the stages in making an overall plan to solve a problem. 12.3.1.2. Explain algorithms and their relationship to a larger system. 12.3.1.3. Describe and use tools to design programs and algorithms. 12.3.1.4. Design, interpret and test algorithms.	<ul style="list-style-type: none"> • Stages in making an overall plan to solve a problem. • Algorithms and their relationship to a larger system. • Tools to design programs and algorithms. 1. Algorithms. 	<ul style="list-style-type: none"> • Planning how to solve a problem. • Identification of stages in making an overall plan to solve a problem. • Application of algorithms in a larger system. 	<ul style="list-style-type: none"> • Inquisitiveness in algorithms planning. • Understanding of the role algorithms play in a major program. • Appreciation of use of algorithms in a program.
12.2 Programming and Structure Query language (SQL)	12.2.1. Principles of programming and Structured Query Language (SQL). 12.2.2. Application of SQL to databases management.	12.2.1.1. Describe Principles of programming and concepts of Structured Query Language (SQL). 12.2.1.2. Code and run SQL Statements 12.2.2.1. Draw and Display Data Sets 12.2.2.2. Modify Data base 12.2.2.3. Generate Queries & Lists 12.2.2.4. Display data sheets (Include: Gridlines, hiding and showing columns, Fonts, Print preview, page setup) 12.2.2.5. Sort and search a database (Include: Find, filter by selection, multi-table	<ul style="list-style-type: none"> • SQL and Databases • Database Installation • Databases and Tables • Filtering Records • Data Manipulation Language (DML) : (Include: Insert, Update, and Delete) • Joins –Querying Data from Multiple Tables • Using Views • Using and Reusing queries. 	<ul style="list-style-type: none"> • Manipulation of databases • Application of databases to real life situations. • Creating databases from given situations. 	<ul style="list-style-type: none"> • Understanding use of structured query language • Inquisitiveness of use of databases. • Productivity in use of databases. • Appreciation of use of databases and SQL.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		queries, setting the Query criteria)			
12.3 System Development	12.3.1 Introduction to System analysis and development	<p>12.3.1.1. State the stages of the system life cycle in a logical order.</p> <p>12.3.1.2. Justify the choice of suitable methods for fact finding.</p> <p>12.3.1.3. Described feasibility study.</p> <p>12.3.1.4. Describe analysis</p> <p>12.3.1.5. Use dataflow diagrams and system flow charts as tools.</p> <p>12.3.1.6. Produce a plan for a project using a Gantt chart</p> <p>12.3.1.7. Describe design</p> <p>12.3.1.8. Explain top down design and use structure diagrams as tools.</p> <p>12.3.1.9. Describe appropriate testing strategies and choose suitable data for testing.</p> <p>12.3.1.10. State items that should be included in technical and use documentation.</p> <p>12.3.1.11. Justify the choice of a method of changeover</p> <p>12.3.1.12. Describe how a system should be evaluated</p>	<ul style="list-style-type: none"> • Stages of the system life cycle in a logical order (Include: Analysis, Design, Implementation, Development and Testing, , Documentation, Development and Evaluation • Feasibility study. • Methods for fact finding. • Dataflow diagrams and system flow charts as tools. • Project plan using a Gantt chart • System design • Top-down design and use structure diagrams as tools. • System testing strategies • Items to be included in technical and use documentation. • Methods of changeover (Include: Advantages and disadvantages) • System evaluation and maintenance. 	<ul style="list-style-type: none"> • Understanding of system life cycle. • Identification of stages of a system life cycle. • Communication through flow charts and diagrams. • Designing of a system life cycle. • Researching of a system life cycle • Analysis of various stages of a system life cycle. 	<ul style="list-style-type: none"> • Team work in the system life cycle. • Skilfulness of identifying system life cycle. • Analytical and critical thinking in constructing a system life cycle. • Logical thinking in constructing Gantt Charts and flowcharts.

TOPIC	SUB TOPIC	SPECIFIC OUTCOME	CONTENT		
			KNOWLEDGE	SKILLS	VALUES
		12.3.1.13. Describe how a system should be maintained.			
12.4 Computer Project Development	12.4.1 Computer Project and systems development.	12.4.1.1. Demonstrate the skills in project planning, 12.4.1.2. Apply simple programming to develop database systems 12.4.1.3. Comprehensively write a computer system Report (Relate it to stages of a system analysis and design). 12.4.1.4. Demonstrate System Product.	<ul style="list-style-type: none"> • Project planning • Database development • System development • System product. 	<ul style="list-style-type: none"> • Planning of projects • Monitoring of projects • Designing of the final project report • Demonstration of system product. 	<ul style="list-style-type: none"> • Efficiency in the use of system development. • Productivity in the use of databases. • Appreciation of the use of system product.
12.5 Types of computer systems	12.5.1. Batch processing systems 12.5.2. Interactive systems 12.5.3. Online systems 12.5.4. Control systems 12.5.5. Automated systems 12.5.6. Multimedia systems.	12.5.1.1 Describe concepts of Batch processing systems 12.5.2.1 Describe Interactive systems 12.5.3.1 Demonstrate Network systems 12.5.4.1 Describe Control systems 12.5.5.1 Describe Automated systems 12.5.6.1 Demonstrate Multimedia systems and their applications	<ul style="list-style-type: none"> • Batch processing systems • Interactive systems • Network systems • Control systems • Automated systems • Multimedia systems and applications 	<ul style="list-style-type: none"> • Identification of Batch processing systems • Application of Networks, Control systems, automated systems, Multimedia systems. • Demonstrate use of multimedia systems. 	<ul style="list-style-type: none"> • Inquisitiveness of automated systems usage. • Appreciation of networks os systems. • Awareness of batch processing systems.

Grades 10 to 12 Computer Studies Scope and Sequence

The table below shows the coverage of the syllabus in Computer Studies from Grades 10 to 12. It is important for a teacher to refer to this table from time to time to know the knowledge that the learners already have or need to have at various levels of learning of the subject.

TOPIC	KNOWLEDGE		
	GRADE 10	GRADE 11	GRADE 12
Computer Career Opportunities	<ul style="list-style-type: none"> • Careers in ICT (Include: Computer operator, Programmer, Software engineer, Web Designer, Computer Technician) • Further education (colleges, polytechnics, universities, and research institutions) 		
Application Software	<ul style="list-style-type: none"> • Difference between application and system software. • Word processing and desktop publishing programs • Features of Spread sheet programming (Include: logical conditions e.g. IF ($C5 > 300$, $C5 * 5\%$, “No Discount”), IF (Mark > 85, “Distinction”)) • Use of different types of software (Include: Special purpose application packages for people with special needs) • Integrated and stand-alone software • Off- the-shelf and in- house software 		
Programing And Pseudo Algorithms	<ul style="list-style-type: none"> • Concept of Programming languages • Program Structure (Include: Program name, variable declaration, beginning, main body, ending) • Use of reserved words in Pascal and C++. • Pre-defined data types • User-defined Data types • Types of variables (Include: Real, integers, character, Boolean) • Simple programs in a chosen programming 	<ul style="list-style-type: none"> • Programming terminology (E.g. in Pascal, C++, Visual Basic, Java or Python (Include: assembler, compiler, interpreter, add, subtract, multiply, divide, calculate)) • Algorithm for a given problem in pseudocode using a variety of structures and the concepts of totalling and counting. • Loops and decision making in a program i.e. conditions and iterations statements (Include: Repeat ... until; if ... then) 	<ul style="list-style-type: none"> • Stages in making an overall plan to solve a problem. • Algorithms and their relationship to a larger system. • Tools to design programs and algorithms. Algorithms. • SQL and Databases • Database Installation • Databases and Tables

TOPIC	KNOWLEDGE		
	GRADE 10	GRADE 11	GRADE 12
	language. (Consider from Pascal and/ or C++)	<p><i>...else, ... endif, case...of ... otherwise ... endcase, while... do ... endwhile, for ... end for</i></p> <ul style="list-style-type: none"> • Dry run with a trace table and test data to understand the behaviour and • Work out the purpose of a pseudocode algorithm. <p>Trace table for pseudocode.</p>	<ul style="list-style-type: none"> • Filtering Records • Data Manipulation Language (DML) :(Include: Insert, Update, and Delete) • Joins –Querying Data from Multiple Tables • Using Views Using and Reusing queries.
Logic Gates And Circuits		<ul style="list-style-type: none"> • Elements of logic gates • Five types of logic gates (Include: AND, OR , NOR , NAND , NOT and the binary output produced from all possible binary inputs.) • Ways of representing the logic gates • Truth tables for a given gate. • Logic circuits (Include: Combinational logic circuits with two or three inputs only) • Web Pages • Text and pictures in a web designer. <p>Flash to animate files and short videos in websites.</p>	
Website Design And Development		<ul style="list-style-type: none"> • Web Pages • Text and pictures in a web designer. <p>Flash to animate files and short videos in websites.</p>	

TOPIC	KNOWLEDGE		
	GRADE 10	GRADE 11	GRADE 12
Networks, Data Representation And Processing	<ul style="list-style-type: none"> • Difference between Data and information • Methods of data collection and preparation • Analogue-to-digital converters and digital-to-analogue conversion. • Data representation. • Reasons of data representation • Data storage/capacity (Include: bit, byte) • Number systems and their representation of integral values (decimal, binary, octal and hexadecimal) • Binary addition and subtraction and their use in computing • Data processing cycle, errors and data integrity • Types of computer processing file • Electronic data processing modes 	<ul style="list-style-type: none"> • Computer networks and data communication • Purpose (include: resource sharing, remote communication, distributed processing facilities, cost effectiveness and reliability) • Limitations of networking • Elements of a Networks- Data communication media (cables and wireless), Data signal (digital and analogue), Communication devices (Include: modems, network cards and hubs) and Network software (operating systems and protocols) • Network topologies (Include: star, bus and ring) • Analogue-to-digital converters and digital-to-analogue converters • Intranet and Internet security Recent developments in the use of the Internet. 	
Hardware of the Computer System	<ul style="list-style-type: none"> • Types of input devices (Include: mouse, keyboard, scanner , OCR , MICR,OMR, Special purpose input devices for people with special needs) and their usage. • Elements of process stage (memory , control unit , arithmetic and logic unit— ALU) • Types of registers • Principle of fetch – execute cycle • Types of output devices (printer ,Monitor, LCD projectors, Special purpose out devices for people with special needs) 	<ul style="list-style-type: none"> • Types of computer system (Include: Batch processing systems, interactive systems, control systems, automated systems). • Information system for on-line services and remote databases. • Monitoring and control systems • Automation and robotics applications • Expert systems and artificial intelligence Management of computer systems. 	
System Development			<ul style="list-style-type: none"> • Stages of the system life cycle in a

TOPIC	KNOWLEDGE		
	GRADE 10	GRADE 11	GRADE 12
			<p>logical order (Include: Analysis, Design, Development and Testing Implementation, Documentation, Development and Evaluation</p> <ul style="list-style-type: none"> • Feasibility study. • Methods for fact finding. • Dataflow diagrams and system flow charts as tools. • Project plan using a Gantt chart • System design • Top-down design and use structure diagrams as tools. • System testing strategies • Items to be included in technical and use documentation. • Methods of changeover (Include: Advantages and disadvantages) System evaluation and maintenance.
Computer Project Development			<ul style="list-style-type: none"> • Project planning • Database development • System development • System product.
Databases		<ul style="list-style-type: none"> • Databases (Include: creating a new data base, new table, auto number field, fields, primary key, tables, records, reports) • Data entry and edit • Relationships (Include: Making the relationship, Form wizard, checking relationships) • Database form. (Include: design view • Tables (Include: Adding and deleting fields) • Databases (Include: sorting, filtering, copying and moving records, creating and 	

TOPIC	KNOWLEDGE		
	GRADE 10	GRADE 11	GRADE 12
		<ul style="list-style-type: none"> running queries) • Generating database reports (Include: Using wizards) • Printing reports and labels. • Database security.(Include: security, confidentiality, data integrity) Threats to data security. 	
Operating Systems And File Management	<ul style="list-style-type: none"> • Types of operating system (Include: Command line , Graphic User Interface-GUI) • Different types of operating systems • Functions of operating system (Include: task scheduling, memory management, control of input/output) • Different types of user interface • File organisation and access(Include: sequential, direct, random, and serial) • Principles of backing up data (backup, restore) • Managing folders and files • Communication between operating system and peripheral devices and maintenance of data integrity. 		<ul style="list-style-type: none"> • Batch processing systems • Interactive systems • Network systems • Control systems • Automated systems Multimedia systems and applications
Presentation Packages	<ul style="list-style-type: none"> • Features of a Presentation Package • Various methods of creating slides. • Adding animations to slides. • Formatting slides. 		
General And Specific Computer Applications	<ul style="list-style-type: none"> • Application of computers in a home environment (Include: washing machines, Entertainment appliances), offices (Communication-Internet and Intranet), commercial environment 	<ul style="list-style-type: none"> • Social and economic effects of computer use on people and organisation (include: emissions, pollution, job loses and gains, health issues, cultural implications) • Data integrity and privacy. 	

TOPIC	KNOWLEDGE		
	GRADE 10	GRADE 11	GRADE 12
	<p>(include: - point of sale, stock controls, traffic control) and in training.</p> <ul style="list-style-type: none"> Data processing, industrial, technical and scientific uses. 	<ul style="list-style-type: none"> Data protection Computer Crime Threats to security and measures to combat them (Include: hacking and other computer crime, computer viruses, internet security). Computers in education (Include: e-learning, e-books, on-line application) Computers in health (Include: medical expert systems, tele-medicine, health research, record keeping, medical diagnosis) Computers in banking (Include: Electronic fund transfer, automated teller machines, credit cards, online banking) Computers in retailing (Include: electronic point of sale, stock management.) Library systems. Office automation Define Commercial and general data processing. 	
Computer Security	<ul style="list-style-type: none"> Security terminologies System Security policy structure Security terminologies Resources (Assets) that require security Various security concerns towards resources (Include: Hardware, human error, power failures, disasters, viruses, unauthorised access, theft, loss of storage devices) Computer security professionals Responsibilities of computer security personnel 		