basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

CURRICULUM AND ASSESSMENT POLICY STATEMENT

(CAPS)

COMPUTER APPLICATIONS TECHNOLOGY

FINAL DRAFT

SECTION 1

National Curriculum and Assessment Policy Statement for Computer Applications Technology

1.1 Background

The *National Curriculum Statement Grades R – 12 (NCS)* stipulates policy on curriculum and assessment in the schooling sector.

To improve its implementation, the National Curriculum Statement was amended, with the amendments coming into effect in January 2011. A single comprehensive Curriculum and Assessment Policy document was developed for each subject to replace the old Subject Statements, Learning Programme Guidelines and Subject Assessment Guidelines in Grades R - 12.

The amended *National Curriculum Statement Grades R - 12: Curriculum and Assessment Policy (January 2011) replaces the National Curriculum Statement Grades R - 9 (2002) and the National Curriculum Statement Grades 10 - 12 (2004)*.

1.2 Overview

(a) The *National Curriculum Statement Grades R – 12 (January 2011)* represents a policy statement for learning and teaching in South African schools and comprises the following:

(i) Curriculum and Assessment Policy documents for each approved school subject as listed in the policy document *National Senior Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF);* and

(ii) The policy document *National Senior Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF).*

(b) The *National Curriculum Statement Grades R – 12 (January 2011)* should be read in conjunction with the following documents:

(i) *An addendum to the policy document, the National Senior Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF), regarding the National Protocol for Assessment Grade R – 12*, published in the *Government Gazette, No. 29467* of 11 December 2006; and

(ii) *An addendum to the policy document, the National Senior Certificate: A qualification at Level 4 on the National Qualifications Framework (NQF), regarding learners with special needs*, published in the *Government Gazette, No.29466* of 11 December 2006.

(c) The Subject Statements, Learning Programme Guidelines and Subject Assessment Guidelines for Grades R - 9 and Grades 10 - 12 are repealed and replaced by the *Curriculum and Assessment Policy documents for Grades R – 12 (January 2011)*.

(d) The sections on the Curriculum and Assessment Policy as contemplated in Chapters 2, 3 and 4 of this document constitute the norms and standards of the *National Curriculum Statement Grades R – 12* and therefore, in terms of *section 6A* of the *South African Schools Act, 1996 (Act No. 84 of 1996,)* form the basis for the Minister of Basic Education to determine minimum outcomes and standards, as well as the processes and procedures for the assessment of learner achievement to be applicable to public and independent schools.

1.3 General aims of the South African Curriculum

(a) The *National Curriculum Statement Grades R - 12* gives expression to what is regarded to be knowledge, skills and values worth learning. It will ensure that learners acquire and apply knowledge and skills in ways that are meaningful to their own lives. In this regard, the curriculum promotes the idea of grounding knowledge in local contexts, while being sensitive to global imperatives.

(b) The National Curriculum Statement Grades R - 12 serves the purposes of:

- equipping learners, irrespective of their socio-economic background, race, gender, physical ability or intellectual ability, with the knowledge, skills and values necessary for self-fulfilment, and meaningful participation in society as citizens of a free country;
- providing access to higher education;
- facilitating the transition of learners from education institutions to the workplace; and
- providing employers with a sufficient profile of a learner's competences.

(c) The National Curriculum Statement Grades R - 12 is based on the following principles:

- Social transformation; ensuring that the educational imbalances of the past are redressed, and that equal educational opportunities are provided for all sections of our population;
- Active and critical learning; encouraging an active and critical approach to learning, rather than rote and uncritical learning of given truths;
- High knowledge and high skills; the minimum standards of knowledge and skills to be achieved at each grade are specified and sets high, achievable standards in all subjects;
- Progression; content and context of each grade shows progression from simple to complex;
- Human rights, inclusivity, environmental and social justice; infusing the principles and practices of social and environmental justice and human rights as defined in the Constitution of the Republic of South Africa. The National Curriculum Statement Grades 10 – 12 (General) is sensitive to issues of diversity such as poverty, inequality, race, gender, language, age, disability and other factors;
- Valuing indigenous knowledge systems; acknowledging the rich history and heritage of this country as important contributors to nurturing the values contained in the Constitution; and
- Credibility, quality and efficiency; providing an education that is comparable in quality, breadth and depth to those of other countries.

(d) The National Curriculum Statement Grades R - 12 aims to produce learners that are able to:

- identify and solve problems and make decisions using critical and creative thinking;
- work effectively as individuals and with others as members of a team;
- organise and manage themselves and their activities responsibly and effectively;
- collect, analyse, organise and critically evaluate information;
- communicate effectively using visual, symbolic and/or language skills in various modes;
- use science and technology effectively and critically showing responsibility towards the environment and the health of others; and
- demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation.

(e) Inclusivity should become a central part of the organisation, planning and teaching at each school. This can only happen if all teachers have a sound understanding of how to recognise and address barriers to learning, and how to plan for diversity.

1.4 Time Allocation

1.4.1 Foundation Phase

(a) The instructional time for subjects in the Foundation Phase is as indicated in the table below:

Subject	Time allocation per week (hours)
I. Home Language	6
II. First Additional Language	4 (5)
III. Mathematics	7
IV. Life Skills	6
• Beginning Knowledge	1 (2)
• Arts and Craft	2
• Physical Education	2
• Health Education	1

(b) Instructional time for Grades R, 1 and 2 is 23 hours. For Grade 3, First Additional Language is allocated 5 hours and Beginning Knowledge is allocated 2 hours as indicated by the hours in brackets in the table above.

1.4.2 Intermediate Phase

(a) The table below shows the subjects and instructional times in the Intermediate Phase.

Subject	Time allocation per week (hours)
I. Home Language	6
II. First Additional Language	5
III. Mathematics	6
IV. Science and Technology	3.5
V. Social Sciences	3
VI. Life Skills	4
• Creative Arts	1.5
• Physical Education	1.5
• Religion Studies	1

1.4.3 Senior Phase

(a) The instructional time in the Senior Phase is as follows:

Subject	Time allocation per week (hours)
I. Home Language	5
II. First Additional Language	4
III. Mathematics	4.5
IV. Natural Sciences	3
V. Social Sciences	3
VI. Technology	2
VII. Economic Management Sciences	2
VIII. Life Orientation	2
IX. Arts and Culture	2

1.4.4 Grades 10-12

(a) The instructional time in Grades 10-12 is as follows:

Subject	Time allocation per week (hours)
I. Home Language	4.5
II. First Additional Language	4.5
III. Mathematics	4.5
IV. Life Orientation	2
V. Three Electives	12 (3x4h)

The allocated time per week may be utilised only for the minimum required NCS subjects as specified above, and may not be used for any additional subjects added to the list of minimum subjects. Should a learner wish to offer additional subjects, additional time must be allocated for the offering of these subjects.

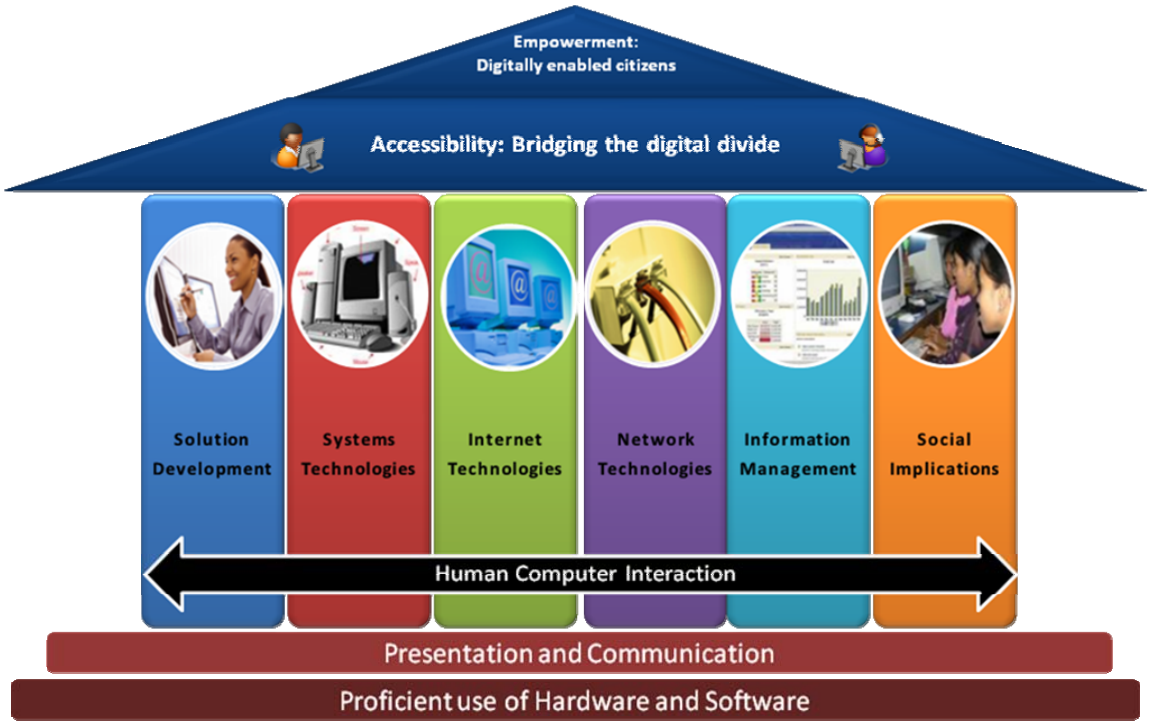
SECTION 2

Computer Applications Technology

2.1 What is Computer Applications Technology?

Computer Applications Technology is the study of the integrated components of a computer system (such as hardware, software and software applications) and the practical techniques for their efficient use and application to solve everyday life problems. The solutions to problems are designed, managed and processed via end-user applications and communicated with the appropriate information and communication technologies (ICTs). ICTs are the combination of networks, hardware and software as well as the means of communication, collaboration and engagement that enable the processing, management and exchange of data, information and knowledge.

The diagram below illustrates how the main topic areas of the Computer Applications Technology subject support the development of digitally enabled learners.



In Computer Applications Technology a learner will

- Be able to use end-user software applications proficiently to produce solutions to problems within a defined scenario.
- Understand the concepts of ICTs with regard to the technologies that make up a computing system.
- Understand the various technologies, standards and protocols involved in the electronic transmission of data via a computer-based network.
- Comprehend the Internet and the WWW and the role that the Internet plays as part of the global information superhighway.
- Have the ability to find authentic and relevant information, process the information to draw conclusions, make decisions and communicate the findings in appropriate presentation media.
- Understand how the use of ICTs affects modern-day living, recognise the legal, ethical, environmental, social, security and health issues regarding the use of ICTs and use ICTs responsibly.

2.2 Overview and weighting of the topics

ICTs develop and change rapidly and, as a knowledge domain, include the following broad knowledge categories that affect Computer Applications Technology:

Topic Area	Sub-Topics	Weighting (Volume)	Resources
Solution Development *(page 4)*	Word Processing Spreadsheets Databases Presentations	60%	Computers Textbook Internet Access ▪ Web browser ▪ Search engine Office Suite ▪ Word processor ▪ Spreadsheet ▪ Presentations ▪ Database Typing Tutor
Systems Technologies *(page 5)*	Concepts of computing Hardware Software Computer Management	12%	
Network Technologies *(page 6)*	PANs LANs and WLANs WANs	5%	
Internet Technologies *(page 7)*	Internet and World Wide Web E-communications	8%	
Information Management *(page 8)*	Access Information Process Information Present Information	10%	
Social Implications *(page 9)*	Impact on Society Legal and Ethical Issues Health and Ergonomic Issues Environmental Issues	5%	

Topic links and overlap

It is important to note that there will always be a degree of overlap between topics. Solution development is enabled by systems technologies in the form of application software. Systems technologies allow for electronic communication. Network technologies enable the Internet that is used for various applications which include information dissemination and electronic data interchange. Data and information management is a key concept and secondary activity overlapping concepts in many other areas such as solution development and Internet technologies. Data and information management is enabled by systems technologies. All ICT activities are primarily driven by human involvement, need and intervention, which in turn highlight social and ethical issues.

For example, when one deals with Information Management, one could incorporate the topic with the Internet Technologies and application software involved in Solution Development. This is also applicable to the Systems Technologies topic where the Social Implications concerned could also be highlighted.

2.3 Time allocation in the curriculum

The Computer Applications Technology curriculum is based on a 40-week academic year, 4 hours per week.

The time allocation for the various topics in Grade 10 and 11 is 36 weeks at 4 hours per week with 4 weeks for examination purposes.

The Grade 12 allocation is 32 weeks at 4 hours per week, 8 weeks for examination purposes.

The table below gives a breakdown of approximate teaching time allocations per topic.

Topic	Grade 10	Grade 11	Grade 12
Solution Development	88 hours / 22 weeks	84 hours / 21 weeks	68 hours / 17 weeks
Systems Technologies	20 hours / 5 weeks	24 hours / 6 weeks	20 hours / 5 weeks
Network Technologies	4 hours / 1 week	4 hours / 1 week	6 hours / 1.5 weeks
Internet Technologies	8 hours / 2 weeks	8 hours / 2 weeks	12 hours / 3 weeks
Information Management	16 hours / 4 weeks	16 hours / 4 weeks	16 hours / 4 weeks
Social Implications	8 hours / 2 weeks	8 hours / 2 weeks	6 hours / 1.5 weeks
Total Contact Time:	*144 hours / 36 weeks*	*144 hours / 36 weeks*	*128 hours / 32 weeks*
Examination	*16 hours / 4 weeks*	*16 hours / 4 weeks*	*32 hours / 8 weeks*
Total (1 academic year):	*160 hours / 40 weeks*	*160 hours / 40 weeks*	*160 hours / 40 weeks*

2.4 Infrastructure, equipment and finances for offering Computer Applications Technology

Infrastructure, equipment and finances for the subject are the responsibility of the school.
(Refer to circular S7 of 2006)

In Computer Applications Technology learners are required to work individually on a computer during contact time and need to access the Internet.

Schools should have a business plan for the subject that addresses the following:

- Initial capital layout for setting up a computer laboratory. The layout should provide for the following:
    - Entrance level computers (to ensure a lifespan of 4 – 5 years), networked
        - One computer per learner per period (during contact time)
        - Provision for sufficient computers to enable the practical examination to be completed in at most two sittings
    - One high-speed printer per network
    - Internet access
    - Data projector or demonstrating software
    - Software (operating system, Office suite, security software – antivirus, Internet security)
- Budget
    - Annual running costs
        - Software licensing (operating system, application software, security software) *(Provinces to negotiate collective agreements)*
        - Cartridges, paper, storage media
        - Breakage and maintenance (regular service plan)
        - Insurance
        - Internet connectivity
    - Sustainability plan
        - To upgrade or replace software and equipment every 4 – 5 years.

SECTION 3

Content and Scope per Topic

3.1 Solution Development

Solution development is the actions and processes involved in developing a computer-based solution by utilising appropriate tools such as the application packages to solve a variety of problems represented by real-life scenarios. For Computer Applications Technology these applications are end-user applications which include word-processing, spreadsheet, database and presentation applications.

	Word Processing	Spreadsheets	Databases	Presentations
Grade 10	• Documents • Text , paragraphs and page functions and manipulation • Lists and columns • Graphics, shapes and diagrams • Tables • Forms • Formatting and editing • Introduction to proofing functions • Introduction to integration • Troubleshooting	• Workbooks and worksheets • Cells, rows and columns • Formatting and editing • Introduction to calculations • Introduction to formulas and functions • Introduction to charts/ graphs • Introduction to error indicators • Introduction to integration • Troubleshooting		• Slides • Slide design and layout elements • Editing and Formatting • Text and lists • Charts, illustrations and tables • Slide show • Introduction to integration
Grade 11	• Reviewing tools and proofing functions • Mail merge • Styles • Sections • Reference functions • Integration techniques • Troubleshooting	• Advanced formulas and functions • Error indicators • Charts • Integration techniques • Troubleshooting	Basic skills and knowledge in working with: • Tables: records and fields; data types • Forms • Data validation • Queries • Simple reports • Calculations • Integration techniques	• Sound • Video • Slide effects: slide animations • Transitions • Slide show • Integration techniques • Troubleshooting
Grade 12	• File handling • Add ins • Use / reinforce word processing skills • Integration • Troubleshooting • Problem solving	• Complex functions • Text manipulation • Date and time calculations • Validation of data • Integration • Troubleshooting • Problem solving	• Reports • Calculation fields in queries and reports • Relational databases • Foreign keys • Queries: two tables • Troubleshooting • Problem solving	• Use presentations

Note:

The various techniques, tools and features of the respective application packages should be dealt with to develop a computer based solution, as an end-user, within different scenarios.

Applications packages share common features that are reinforced when working with the different applications

3.2 Systems Technologies

Systems technologies are the physical and non-physical components of a computer system. The components of the system are independent units which are designed to perform a particular function. These components which include hardware, peripherals and software components are connected as a unit to perform the basic functions of a computing system, which include input, processing, output, storage, communication and transfer of data in an electronic format.

	Introduction to Concepts of Computing	Hardware (Systems Unit)	Software	Computer Management
Grade 10	• General model of a computer • Introduction to data and information • Classification of computers • Role of computers • Advantages and disadvantages of computers • ICTs in everyday life – overview and introduction	• Hardware components • Ports and connectors • Hardware configuration • I/O devices • Storage devices and media • Processing	• Definition of software • Components • Definition and overview of system and application software • Classification of software • Purpose and use of software • System requirements and compatibility • Introduction to operating system concepts	• Introduction to files and folders • Introduction to housekeeping • File Manager • Print management
Grade 11	• Information processing cycle • Types of computers • Computer categories • Role of ICTs • New technology	• Mobile technology • Portable devices • Devices for physically challenged users • Alternative I/O and storage devices • New technology	• Web tools • Help files • System software • Utilities • Web-based software • New technology	• Housekeeping • File management • System properties • Troubleshooting • Factors influencing performance
Grade 12	• Case studies/ scenarios regarding use of ICTs • Use of computers in a variety of contexts	• Appropriate use of devices • Buying decisions • Case studies • New technology	• Buying decisions • Human error potential • System requirements • Case studies • New technology	• Common software problems • Case studies • Troubleshooting • New trends

Note:
Hardware and software should be dealt with at a non-technical level but which will enable the learner to:

- *understand the concepts that make up a computer system;*
- *troubleshoot at an elementary level or select the most appropriate hardware for a given scenario;*
- *know whether to upgrade or buy new equipment;*
- *be aware of new trends and developments and how to integrate these with existing or new equipment;*
- *know how technology can benefit the user in specific contexts.*
- *understand the operations involved in the management and optimal utilisation of a computer system.*

Content in this focus area should be taught from a basis of familiar contexts (what learners are busy with) to unfamiliar contexts (new trends and developments). This focus area lends itself meaningfully to integrate content from the Social Implications and Internet and Network Technologies focus areas, and should be taught likewise.

3.3 Network Technologies

Network technologies include various network technologies to facilitate the management and dissemination of digital data from one point to another. Network technologies also incorporate the electronic systems used for electronic data interchange that is used to facilitate information dissemination between various individuals or groups at a single point or dispersed locations.

	Networks
Grade 10	• Introduction to networks and network concepts • Aims and objectives of networks • Advantages and disadvantages • Types of networks: PAN
Grade 11	• Types of network: LAN and WLAN • Basic components of network • Connection • Intranet • Introduction to network security concepts • New technology
Grade 12	• Types of networks: WAN • Internet as a WAN • Communication: definition and overview • Communication devices • Identify hardware components • Communication modes and tools • Types of electronic communication • Understand advantages, disadvantages and limitations regarding electronic communication

Note:

Network Technologies should be dealt with at a non-technical level, but at a level which will enable the learner to understand the concepts of the various technologies and the standards and protocols involved in the electronic transmission of data via a computer-based network.

Learners should be able to do troubleshooting at an elementary level and be of aware of new trends and developments.

3.4 Internet Technologies

Internet technologies include the WWW and all interrelated processes in the digital presentation of multimedia data on a Web page. Internet technologies are defined as a set of related and interconnected technologies which enable the establishment of global networks for various purposes such as collaboration, electronic data interchange, electronic commerce, electronic communication and social networking.

	Internet and WWW	Electronic Communications
Grade 10	• Introduction to the Internet and World Wide Web • Overview of the Internet and WWW • Internet addresses • Components of the Internet and WWW • Connecting to the Internet • Browsers and search engines • Introduction to browsing and searching techniques	• Introduction to electronic communications • Overview of e-communication • Types of electronic communications • ISP and Web-based e-mail • E-mail software features • Introduction to the use of e-mail and netiquette • Advantages and disadvantages of electronic communications
Grade 11	• Network systems • Features of browsers • Web sites • Using a browser • Popular Web browsers • Web pages, websites, hyperlinks, URLs, HTTP, HTTPS	• Advanced e-mailing: message rules • Types of electronic communication modes and tools • Uses of electronic communication modes and tools • Communication solutions and basic troubleshooting
Grade 12	• Overview of Internet services • Web and plug in applications • Social networking • Types of websites, their purpose and users and typical application • New trends and technology	• More advanced communication modes and tools • PIM contacts, tasks, reminders • Portals, blogs, wikis, news • Troubleshooting and problem solving • New trends and technology

Note:

Internet Technologies should be dealt with at a non-technical level but which will enable the learner to:

- *understand the role that the Internet and the WWW play as part of the global information superhighway and the contribution towards the digital age;*
- *introduce the software involved to render the Internet as a service;*
- *understand the concepts of the technologies and standards implemented to enable electronic communication*;
- *troubleshoot at an elementary level and to find the most workable ways to approach Internet problems;*
- *understand how technology can benefit specific scenarios;*
- *be aware of new trends and developments.*

3.5 Information Management

Information management refers to the techniques and technologies involved in the collection, storage, processing and communication of data into information that results in knowledge and leads to decision making. It includes the use of appropriate presentation tools to communicate new knowledge and recommendations.

	Access Information	Process Information	Present Information
Grade 10	• Data and information • Problem statement in defined contexts • Problem definition • Questions • Enquiry strategies • Information sources • Data gathering	• Questions and information • Patterns • Ethical use of information • Processing and manipulation • Appropriate software usage • Evaluation	• Documents to communicate findings • New knowledge presentation • Final check • Present information in specific formats • Organise information in logical groupings and flow • Report
Grade 11	• Problem statement in different contexts • Different levels of questions • Technology to assist in problem solving • Sources • Data gathering • Information evaluation • Evaluate websites and information	• Extract appropriate information • Questions and information • Appropriate tools to organise information • Role of spreadsheet and database	• Conclusions • Cohesive and logical recommendations • Communication with appropriate graphics • Report
Grade 12	• Reformulation of problem into complete statement • Critical questions • New question as research develops • Manage volumes of information • Evaluation of sources	• Complex searches • Advanced searching techniques • Information evaluation • Report appropriately from different sources • Copyright and plagiarism • Info in logical grouping and flow	• Demonstrate personal understandings • Conclusions • Integrated documents to present information • Report

Note:

The learner should:

- *be able to provide an understanding of the concept of information with regard to classification thereof;*
- *know how to access and gather information,*
- *know how to evaluate the authenticity of information,*
- *know how to process information in generating new knowledge,*
- *be able to make informed recommendations based on new knowledge,*
- *be able to present and communicate the findings in appropriate presentation media.*

Most of this content can be taught and reinforced through the Practical Assessment Task (PAT).

3.6 Social Implications

Social implications are the issues relating to the digital age and bridging the digital divide and include issues that lead to the responsible use of ICTs. Social implications look at the effect the use of computer technology has on everyday life.

	Influence on Society	Legal and Ethical Issues	Health and Ergonomic Issues	Environmental Issues
Grade 10	• Definition of ICTs • Influences on life and life styles • Advantages and disadvantages • Introduction of environmentally friendly and ergonomically designed workspaces	• Introduction and concepts • Ownership of electronic material • Viruses and other threats • Enhancing accessibility	• Posture • Safe behaviour • Ergonomics to promote health and well-being	• Green computing issues • Environmental issues relating to the use of ICTs
Grade 11	• Effect of ICT use in workplace and employment practices • Role of technology in a variety of careers • Influence on global trends and access to ICTs	• Integrity and ownership of data and information • Human computer interaction • Security and privacy • Data protection • Protection from online threats	• New physical environments and ergonomics • The use of OS features to enhance safe use of computers	• Green computing – e-waste and power consumption • Emphasis on national environment issues
Grade 12	• Reasons for using ICTs • Influence and use of social networking technologies • New technologies	• Computer crimes • Responsible computer use • Different scenarios and case studies	• User-centred design in software • Usability and functionality issues • Interpret adverts	• Interpret scenarios • Use of ICTs in global environmental issues

Note:

Learners should be able to:

- *provide an overview and understanding of how ICTs affect modern-day living;*
- *use ICTs responsibly.*

Most of the content of Social Implications should be dealt with and integrated with other topics on a need-to-know / just-in-time basis and should not be taught as a stand-alone topic. The time scheduled for this topic could therefore be added to other topics if necessary.

SECTION 4

Suggested teaching plan

The suggested teaching plan indicates the content to be covered per term. The sequence of the topics listed is in no specific order and the time given is an approximate indication of how long it could take to cover the content. Teachers should design their own work schedules (or use / adapt the one from their textbook) to teach the content per term using any appropriate sequence and pace.

The subtopics presented in the term plans should not be seen as stand-alone topics. Relevant subtopics or content could be presented in an integrated manner, based on a just-in-time / need-to-know basis. Integrating the topics in the lesson presentation should flow naturally due to the nature, links and 'overlap' of the content. Some content from one subtopic might strengthen and underpin the content of another.

This approach should be applied throughout the whole three-year curriculum where applicable.

As term lengths may vary from one year to another, the teaching plan / work schedules should be adapted accordingly on a year-to-year basis.

4.1 Grade 10

Term 1

Introduction to computers (± ½ week / 2 hours)

What is a computer?

- General model – Input, processing, output, storage, communication
- Types: Desktop, laptop, PDA
- Concepts of data and information
- Role, advantages and disadvantages of computers

ICTs used in everyday life – overview and introduction

- Multi-purpose devices such as PC
- Dedicated devices such as ATMs and electronic appliances (embedded computers)
- Identify ICTs in contexts such as home, communication, business, education, banking

Introduction to using computers (Practical work) (±½ week / 2 hours)

- Start up – switch on the computer, log on, access programs.
- Desktop: First looks, icons and shortcuts
- Introduce the desktop:
  - My documents, recycle bin, start button,
  - Task bar, etc.,
  - My computer
  - File manager, e.g. Windows Explorer
- Basic accessories

Computer Management: (±½ week / 2 hours) File organisation: Basic concepts and introduction to file organisation:

- Examples of different types of files
- Drives, folders, files and file specification: Drive: Path / Filename / File extension
- Files: File naming, conventions, file properties – types, size
- File manager, e.g. My Computer tree structure
- File-naming conventions
- File types and extensions (association) such as pdf, mdb, txt, exe, xls, doc / docx, dot / dotm
- Organise, copy, rename, delete, restore, move, sort files and folders

Do theoretically and practically Reinforce when dealing with word processing, spreadsheets and presentations.

Hardware: (±1 week / 4 hours) Basic concepts and introduction to software:

- What is hardware?
- Identify hardware components
- Identify ports and connectors such as network ports, USB and FireWire

Input: What is input? What is an input device?

- Types of input:
  - Data – unprocessed text, numbers, images, video, audio
  - Instructions – programs, commands, user response

Input devices: Keyboard (external – desktop, built-in – laptop) and mouse (optical, wireless)

Output: What is output? What is an output device?

- Hard copy vs. soft copy

Output devices: LCD monitors (size, resolution, concept of pixels) and printers (inkjet and laser)

Storage: What is storage? What is a storage device? What are storage media?

- Measuring capacity (KB, MB, GB and TB) of storage media, volatility
- Storage devices and media: Hard disk (fixed) and flash memory – capacity and care

Use I/O devices – Practical work

- Basic use of traditional I/O devices:
  - Introduction to basic keyboarding techniques
  - Basic techniques operating a mouse
  - Printing documents

Save and retrieve files using storage devices such as hard disk, flash disks, network drives

Software: (±½ week / 2 hrs) Basic concepts and introduction to software:

- What is software? Identify software components
- Concept of a GUI
- Identifying and using typical components of a GUI such as icons, toolbars, menu usage and navigation, radio buttons, checkboxes, dialog, list and combo boxes, etc.
- Minimising, restoring, resizing, moving and closing windows
- System software vs. application software

Application Software

Basic concepts and introduction to application software:

- What is application software?
- Types and typical features and functions
- Examples such as Office suites, financial applications, designing, gaming / entertainment, multimedia and communication software

System Software

Basic concepts and introduction to system software:

- What is system software? Examples
- Operating System – basic function / purpose, typical features -GUI
- Administering security (PC / laptop) – log on, user name, password

Word Processing (Practical Work) (±6½ weeks / 26 hours)

- What it is used for?
- First looks: Workspace, ribbon, tab, menus, etc.
- File management in word processor: Open new and existing documents, close, save, save as, print
- Select data using keyboard and / or mouse
- Text: entering, editing and deleting text
- Keys: Tab, Caps Lock, Shift, Backspace, etc.
- Formatting and formatting marks
  - Font type, style, size, colour, highlight,
  - Paragraph: spacing, alignment, borders, shading
- Editing: Cut, copy, paste, find, replace
- Reviewing: Proofing: spelling and grammar
- Page layout: setup: margins, orientation, size, border
- Document layout: Page numbers, page breaks, symbols
- View options – print layout, preview
- Insert and manipulate illustrations
  - Pictures, clip art, word art, shapes, charts, smart art

Social Implications (±½ week / 2 hours)

Social issues applicable to the above content: Ergonomics, licensing, intellectual property, green computing (e-waste), health

Assessment (PoA): 1 Practical Test + 1 Theory Test covering content taught to that point.
Reporting: Add raw marks and totals and convert to % for term mark.

Term 2

Hardware (±½ week / 2 hours)

I/O and storage devices: (Basic concepts, features and uses)

- Pointing devices
  - Touch pad, trackball, pointing stick, touch screen, pen input, joystick
- Digital camera
- Scanning and reading devices
  - Flatbed, handheld, sheet feed scanners
  - RFID, magnetic stripe, MICR, OMR, barcoding
  - OCR
- Video input – video camera, webcam
- Audio input: Microphone, voice recognition
- Biometric input e.g. fingerprint scanners
- Audio output: What is an audio output device?
  - Headsets and speakers, Voice input
- Other output
  - Fax / fax modem, multifunction devices, data / DLP projector
- Optical disks: CDs and DVDs, Memory cards

Processing:

- Basic concepts and introduction to the basic components of system unit:
  - Motherboard, CPU, Memory (RAM, ROM)
- Measuring speed in GHz

Spreadsheets (±2 weeks / 8 hours)

Basic skills a core concepts

- What is it used for? First looks:
  - Rows, columns, cells, sheets, workbook
- Cell reference and the importance of using cell references rather than constant values in cells and formulas
- Cell ranges
- Data types such as General, Number, Currency, Date and Time
- Values and contents
- Format cells such as data type, borders, shading, alignment, wrap, merge, alignment, text direction, merge, split, auto fill
- Formatting rows, columns and sheets
- Size (width and height), insert, delete, hide, unhide, borders, styles
- Reinforce generic / common concepts such as formatting and editing, page layout, illustrations, search, proofing as in word processor
- File options: Open, save, save as, new, print
- Basic calculations using basic operators including +, -, x, ÷ and the use of brackets
- Error indicators: #NAME!, #DIV/0!, #REF!

Software (±½ week / 2 hours)

- Stand-alone vs. integrated software
- Freeware, shareware, proprietary software, integrated software
- Open source software – definition and benefits, disadvantages
- Versions, patches, service packs

Licensing and licensing agreements including end-user and site license agreements

Application software: Concepts such as customising, installing, etc.

System software

- Drivers: What is a driver?
- Utility programs for housekeeping, PC management: What is it?

Word Processing (±3 weeks / 12 hours)

- Paragraphs (basic)
  - Bullets and numbering, tabs, indent
- Document layout
  - Headers and footers
- Tables (basic)
  - Insert, table tools, table design, table properties
- View options
  - Work with more than one document / window, zoom

Networks (±½ week / 2 hours)

Basic concepts and introduction to networks:

- What is a network?
- Aims and objectives of networks
- Advantages such as facilitating communications, sharing hardware, software, data and information, fund transfer (EFT)
- Disadvantages such as security and privacy issues

Computer Management: (±½ week / 2 hours)

- Create shortcuts
- Taking screenshots
- Install a new printer
- Change the default printer
- Basic printing and printer queue management
- Compress / decompress files and folders

Information Management (±½ week / 2 hours)

- Data, information, knowledge, decisions / conclusions
- Task definition, questions and questioning to determine information needs
- Information sources and data gathering tools
  - Electronic reference works, e.g. Encarta, Internet, printed media, e.g. books, surveys / questionnaires, people, e.g. interviews, personal experience, implied knowledge
- Evaluate sources

Understand the problem: State in own words; determine what needs to be done / found; what is known? What information is missing or needed? Find where or how?

Social Implications (±½ week / 2 hours)

Social issues applicable to the above content: Unauthorised access, ethical use of computers, networks and recourses, safe Internet use

Assessment (PoA): 1 Assignment + 1 Examination – 1 Practical Paper + 1 Theory Paper

Reporting: Add raw marks and totals and convert to % for term mark.

Note:

It is important to note that application packages share common features (formatting, editing, page layout, illustrations, etc.) that are reinforced when dealing with the different packages and as these features may take up more with the first application taught, they take up less time when teaching subsequent packages.

Term 3

<table>
<tr>
<td>Networks (±½ week / 2 hours)
• Personal area network (PAN)
- What is it?
- What is it used for?
- What is needed to create a PAN?
• Internet as an example of a network
• Networks: Modem / router / switch and channel
• Obtaining Internet access:
- Identify hardware and software needed for connecting to the Internet using a PC
- ISP – What is it and why are they needed?</td>
<td>Spreadsheets (±2½ week / 6 hours)
• Formulas vs. functions
• Know and use basic functions such as: sum, average, count, min, max, today, rand, mode, mean
• ‘Round’ numbers using cell formatting
• Sort
• Work with sheets: rename, headers and footers, print</td>
</tr>
<tr>
<td rowspan="2">Communication (±1 week / 4 hours)
• What is e-communication?
• What is a communication device?
• Communication using a PC
• Concept of downloading and uploading
• Concept of multimedia
• The WWW as a subset of the Internet
• Taxonomy of e-mail address and Web addresses
• Types of digital communications such as e-mail, instant messaging, text messaging, mailing list
- What is it? Uses, advantages and disadvantages, good practices
• ISP vs. Web-based e-mail
• Techniques and ethics of copying from the Internet
• Browsers and Search engines and subject directories
• E-mail software features such as Cc and Bcc fields, attachments and address books
• Websites, Web pages, hyperlinks, URLs
• Overview of facilities / services
• Basic browsing and searching techniques
• Fax / computer fax
• Fax to e-mail
• Netiquette</td>
<td>Communications (Practical) (±½ week / 2 hours)
• Basic use of the Internet and e-mail
• Follow hyperlinks
• Apply netiquette rules such as spelling checking, messages, being courteous and concise, not gossiping, reducing the size of attachments and not typing in capital letters
• Basic e-mailing, e.g. compose messages, send and receive, forward, reply to, reply to all
• Attachments</td>
</tr>
<tr>
<td>Presentations (±2 weeks / 8 hours)
Basic skills a core concepts
• What it is it used for?
• First looks: Slides, designs layouts
• Formatting
- Font type, style, size, colour, highlight, alignment
- Paragraph: spacing, alignment, bullets, indentation
• Editing: Cut, copy, paste, find, replace
• Text: entering, editing and deleting text
• Reviewing: Proofing: spelling and grammar
• Page layout
- Page set-up: margins, orientation, size
• Slides: Insert, delete, numbers, headers and footers
• View options – normal, slide sorter, notes
• Start slide show</td>
</tr>
<tr>
<td>Information Management (±1½ week / 6 hours)
• Processing and manipulating information using spreadsheet
• Presentation of information:
- Graphs, tables, techniques and tools in word processor
- Report writing – elements of a report: introduction, body, conclusion, bibliography / references, copyright / plagiarism issues
- Summarising information / report using presentations software
- Basic elements of different types of documents used for communication such as letters, flyers, advertisements, forms, slide shows, Web pages
• Practical Assessment Task (PAT) – Information Management culminates in the PAT. Start with the PAT where learners will apply the theoretical and practical content, concepts and skills of Information Management</td>
<td>Word Processing (±1½ weeks / 6 hours)
• Reviewing
- Comments
- Protecting document
• Document layout
- Page setup: Columns, hyphenation
- Watermark
- Cover page
• Integration – Hyperlinks</td>
</tr>
<tr>
<td colspan="2">Social Implications (±½ week / 2 hours)
Social issues applicable to the above content: Work collaboratively to share limited resources, Care of technology equipment, Recognise and acknowledge the ownership of electronic material, Appropriate communication etiquette, Viruses and other threats – basic concepts, Options available for enhancing accessibility like: voice recognition software, screen readers and magnifiers, on-screen keyboards, etc.</td>
</tr>
<tr>
<td colspan="2">Assessment (PoA): 1 Practical Test + 1 Theory Test
Reporting: Add raw marks and totals and convert to % for term mark.</td>
</tr>
</table>

Term 4

<table>
<tr>
<td>Content using case studies (±½ week / 2 hours)
Consolidate content, concepts and skills using case studies to:
• identify the basic hardware configuration of a computer in terms of the processor, memory and hard drive size
• understand computers and their uses
• understand how technology helps one to operate more efficiently, effectively and more accurately.
• know how to use computers as tools to access information and to communicate with others around the world.
• make better buying decisions – interpret advertisements and make judgements about quality and usefulness when buying equipment, software
• know how to fix ordinary computer problems and deal with challenges that arise with utilising computers (and know when to call for help)
• know how to use the Internet and e-mail
• make informed decisions and choices in selecting proper communication devices and proper modes of communications for a given scenario
• know what kind of computer uses can benefit them and advance them in whatever work they do / career path they will follow
• know how to protect themselves against online villains and threats.
• know how to apply digital tools to communicate, gather, analyse, use information and solve problems
• understand technology concepts, systems and operations
• recommend specific hardware / software for a specific scenario</td>
<td>Spreadsheets (±1½ weeks / 6 hours)
• Graphs
- Pie, line, column/bar
- Purpose of each / when to use
- Create, format, edit
- Interpretation of information presented in a graph
• Sort
• Basic integration techniques
• Solve problems using spreadsheets
• Troubleshoot spreadsheet problems

Presentations (±1 week / 4 hours)
• Reinforce generic / common concepts such as formatting and editing, page layout, illustrations, search, proofing as in word processor
• Insert illustrations, tables
• Animations (basic)
• Basic integration techniques</td>
</tr>
<tr>
<td>Documents (±1 week / 4 hours) (Word processor, spreadsheet, presentations)
• Reproduce and create documents that incorporate text, graphics and data
• Create documents using templates
• Support communication with appropriate features such as images, symbols
• Integrate text and graphics to form meaningful message
• Balance text and graphics for visual effect
• Use media, visual literacy and technology skills to create products that express understanding</td>
<td>Word Processing (±1 week / 4 hours)
• Templates and wizards
• Electronic forms
• Accessing offline help including FAQs (frequently asked questions)
• Integration techniques
• Solve problems using word processor
• Troubleshoot word processing problems</td>
</tr>
<tr>
<td>Information Management (±2 weeks / 8 hours)
• Extract and record appropriate information from a source
• Evaluate information for answering questions posed
• Summarise information / data by picking key words / concepts from gathered information / data
• Process / manipulate / analyse information / data from a source to retell what has been discovered
• Understand and consider ethical use of information, e.g. copyright and plagiarism
• Analyse information / data using appropriate software
• Organise information gathered so that it is useful with logical grouping and flow
• Use word processing and spreadsheets to organise, manipulate and process information / data
• Create a product such as a report to solve a problem and / or make a recommendation and / or convey an idea / plan
• Share new knowledge and understanding
• Draw a conclusion
• Develop cohesive, logical and well-supported finding / idea / opinion / recommendation
• Present and communicate information in specific formats
• Present and communicate information using appropriate forms such as word processing documents, spreadsheets, reports, presentations</td>
<td>Computer Management (±½ week / 2 hours)
• Control Panel
- Date and time
- Default programs
- Folder options
- Internet options
- Regional and language settings
- User account
• Work between multiple documents / programs concurrently
• Basic utilities, housekeeping, computer management
• Use basic security options – user name, log on, password
• Practise safe computing
• Utility software, e.g. anti-virus
• Carry out basic housekeeping tasks</td>
</tr>
<tr>
<td colspan="2">Social Implications (±½ week / 2 hours)
• Influence on society: Identify how ICTs influence one's life and life styles, benefits of ICTs in society, limitations of ICTs in society, disadvantages of ICTs in society, influence on e.g. home, office, education, business, banking
• Computer crime: Examples and effect</td>
</tr>
<tr>
<td colspan="2">Assessment (PoA): Practical Assessment Task + 1 Examination – 1 Practical Paper + 1 Theory Paper</td>
</tr>
<tr>
<td colspan="2">Promotion Mark: Convert term marks to 25%, Convert PAT mark to 25%, Convert Paper 1 to 25%, Convert Paper 2 to 25%</td>
</tr>
</table>

4.2 Grade 11

Term 1

<table>
<tr>
<td>Overview and introduction (±½ week / 2 hours)
• Information processing cycle including communication
• Advantages and disadvantages of using computers
• Types of computers and typical features
– Dedicated devices such as ATMs and electronic appliances
– Mobile computers and devices such as PDAs
– Client / server
• Categorise computers
– Portable (mobile) / non-portable
– Processing power
– Usage
• The role of ICTs in contexts such as home, communication, business, education, banking, travel
• Particular technologies being used for specific purposes</td>
<td>Spreadsheet (±3 weeks / 12 hours)
• Reinforce content, concepts and skills from Grade 10
• Absolute cell referencing
• Autofill options
• Using spreadsheet functions such as round, small, large, countif, counta, countblank, sumif, power, rand
• Rounding off numbers and the difference between rounding and formatting
• Conditional formatting
• Interpreting error indicators such as: circular reference</td>
</tr>
<tr>
<td>Hardware (±1 week / 8 hours)
Input
• Scanners and digital cameras
• Input via PDAs, smart phones, tablet PCs, data collection devices
• Terminals (POS), ATMs
• Alternative input devices such as virtual keyboards, optical keyboards
• Input devices for physically challenged users
• Wireless technology
• Advantages / disadvantages / limitations of input devices
• How to use
• When to use
• What software / other equipment are required, e.g. device drivers, OCR?
Output
• Display devices
– What determines the quality of monitors and printers?
– Current trends and new technology: plasma, HD-technology
• Software and input and output devices for physically challenged users
• Wireless technology
• List advantages / disadvantages / limitations of output devices
• How to use, when to use
• What software / other equipment are required, e.g. device drivers?</td>
<td>Word Processing (±3½ weeks / 14 hours)
• Reinforce content, concepts and skills from Grade 10
• File management
– Print (including options such as range of pages, odd or even, number of copies, print quality), send to (e-mail, internet fax), convert, properties
• Input data from different file formats, e.g. text files, tables
– Editing: Paste special, find, replace (more options)
– Page layout: Themes and background
• Document layout
– Section breaks and sections
– Headers and footers (including date, path and filename)
– Page numbers, different first page, odd, even
• Paragraph
– Customise bullets and numbering
– Customise spacing
• Autocorrect
• Customise templates
• Import / export data
• Online and offline help</td>
</tr>
<tr>
<td>Application Software (±½ week / 2 hours)
• Understand the role of application software
• Function / purpose / role of different types
• Compatibility
• When / where to use
• Web tools such as blogs, wikis
• Help files</td>
<td>Presentations (±1 week / 4 hours)
• Reinforce content, concepts and skills from Grade 10
• Slide transitions
• Animations, sound, video
• Design themes and tools
• Print and view options such as handouts, slide master
• Set up and customising slide show
• Problem solving using presentations
• Troubleshooting presentations</td>
</tr>
<tr>
<td colspan="2">Social Implications (±½ week / 2 hours)
• Social issues applicable to the above content
• Unauthorised access, ethical use of computers, networks and recourses, safe Internet use, green computing issues</td>
</tr>
<tr>
<td colspan="2">Assessment (PoA): 1 Practical Test + 1 Theory Test</td>
</tr>
<tr>
<td colspan="2">Reporting: Add raw marks and totals and convert to % for term mark.</td>
</tr>
</table>

Term 2

<table>
<tr>
<td>Hardware (±1 week / 4 hours)
Storage
• Online storage
• HD and Blu-ray technology
• New technology
• Interpret adverts
• Basic troubleshooting
• How to write CDs, DVDs
• Primary storage (memory) vs. secondary storage
• List advantages / disadvantages / limitations of storage devices
• How to use, when to use
• Concepts of new trends such as cloud computing
Processing
Understand the role of basic components of the system unit
- Motherboard – houses components
- CPU – processing
- RAM – holds data and instructions during processing / execution
- ROM – stores start-up instructions
• Start-up process</td>
<td>Database (±2 weeks / 8 hours)
• What it is it used for?
• First looks:
- Objects: Table, form, query, report
• Tables: Records and fields, field names
- Basic field properties: size / length, default value, decimal places, required
• Data types
- Text, Number, Date and Time, Currency, Autonumber, Yes/No, Memo
• Database structure
• Primary key
• Create tables and forms
• Enter data (records)
• Add and delete records, fields
• Formatting and editing
• Sort
• Page headers, footers (design view)
• Report headers, footers
• Basic data validation techniques
• Use filters
• Work with different views, e.g. design view, table view</td>
</tr>
<tr>
<td>Networks (±1 week / 4 hours)
• Local area networks (LAN and WLAN)
- What is it?
- Where is it used?
- Definition, purpose, role, uses
- Examples
- Function
• Basic components of a network– concepts only
- Workstations and servers
- NIC
- Switch
- Communication medium
- Communication software
• Connection
- Wired vs. wireless
- Data transmission speed
• Log in / log off
• Intranet – What is it? Uses
• Basic network security such as passwords, usernames and access rights</td>
<td>Spreadsheets (±1½ week / 6 hours)
• Simple IF function
• Use of relational operators (> < <= >= <>) in simple IF functions
• Create, format and edit charts using including meaningful titles and labels, gridlines, legends and options appropriate to the graph type chosen
• Integration techniques
Word Processing (±1 week / 4 hours)
• Styles</td>
</tr>
<tr>
<td colspan="2">Information Management (±1 week / 4 hours)
• Reinforce content, concepts and skills from Grade 10
• Task definition, data and information gathering
• Evaluate sources: Purpose, author, objectivity, coverage, currency, recognition
• Evaluate websites: Navigation and usability, authority, content validity</td>
</tr>
<tr>
<td colspan="2">Social Implications (±½ week / 2 hours)
• Social issues applicable to the above content
• Unauthorised access, ethical use of networks, network safety and security issues, privacy issues – spyware, adware, spam, respect privacy and products of others</td>
</tr>
<tr>
<td colspan="2">Assessment (PoA): 1 Assignment + 1 Examination – 1 Practical Paper + 1 Theory Paper</td>
</tr>
<tr>
<td colspan="2">Reporting: Add raw marks and totals and convert to % for term mark.</td>
</tr>
</table>

Note:
It is important to note that application packages share common features (formatting, editing, page layout, illustrations, etc.) that are reinforced when dealing with the different packages and as these features may take up more with the first application taught, they take up less time when teaching subsequent packages.

Term 3

Database (±3 weeks / 12 hours)

- Design basic queries using and, or, not and sorting options
- Selecting which fields to display in a query
- Design basic reports using a wizard
- Choosing appropriate data types
  - Text, Number, Date and Time, Currency, Autonumber, Yes/No, Memo, OLE object, Hyperlink, Lookup
- Field properties
  - size / length, default value, decimal places, required, input mask, validation rule, validation text, alignment
- Basic calculations at end of report such as: sum, avg, count, min, max
- Import / export data

Spreadsheets (±1 week / 4 hours)

- Import / export data
- Help files
- Work with sheets: move, copy, headings, protect, gridlines, freeze panes, etc.
- Use different print options such as print area
- Integration techniques within package, e.g. linking cells and formulas between sheets

Word Processing (±1 week / 4 hours)

- Mailings
  - Mail merge
- Reference
  - Table of contents
  - Captions
  - Citations and bibliography

System Software and Computer Management (±1½ weeks / 6 hours)

Do theoretically and reinforce practically where appropriate

- Types of system software
- Where does the operating system reside?
  - Different types of computers, e.g. PC, PDA
- Management of desktop
- Management of files: File types, properties, file attributes such as read-only and hidden, import, export, search
- Add devices: Role of drivers, plug and play
- Operating system utilities such as:
  - Install / uninstall, disk scanner / defragmenter, backup / restore, archive, search utility
  - Compress / decompress files and folders, security features such as control of spyware, adware, firewall
- Determine and set basic system properties such as the resolution and refresh rate, volume setting, etc.
- Function / purpose / role; How / where / when to use
- Basic troubleshooting using utility software

Communications (±1 week / 4 hours)

- What is a communication network?
- Communication system
  - Two or more computers, communication devices, communication channel
- Types of digital communications such as e-mail, instant messaging, text messaging, picture / video messaging, smart phones, VoIP (Skype), etc.
  - Advantages and disadvantages, Good practices
- Common examples of Web browsers
- Uses of computer communications
- Communication devices: Wireless modem / router
- New trends and technologies

Information Management (±2 weeks / 8 hours)

- Role of spreadsheet and database to process and manipulate data to provide information
- Reinforce content, concepts and skills through application packages and PAT

Social Implications (±½ week / 2 hours)

- Social issues applicable to the above content:
- Computer and human error and the effects thereof such as accuracy and validity – data input, data types used, e.g. database, Verification and validation of data, software bugs, hardware failure, how ICTs affect communication, decision-making, e.g. data analysis

Assessment: 1 Practical Test + 1 Theory Test

Reporting: Add raw marks and totals and convert to % for term mark.

Term 4

<table>
<tr>
<td>Hardware and software (±½ week / 2 hours)
• Categorise hardware and software
• Web-based software – what is it?
• Basic system requirements, e.g. hard disk space, CPU, RAM – what does it mean? How does it link with software?
• Software and input and output devices for physically challenged users</td>
<td>Spreadsheets (±½ week / 2 hours)
• Consolidate and reinforce content, concepts and skills to this point
• Plan and design own documents for specific scenarios and inquiries
• Integration with other packages
• Problem solving using spreadsheets
• Troubleshooting spreadsheets</td>
</tr>
<tr>
<td rowspan="2">Documents (Word processor, spreadsheet, presentations, database) (±1½ week / 6 hours)
• Use integrated software effectively and efficiently to reproduce and create documents that incorporate text, graphics and data
• Manipulate graphics and text within documents.
• Use integrated software to create and design documents for specific purposes
• Apply general principles of layout and design to a document process
• Emphasise information using techniques such as placement, colour
• Create documents by customising templates
• Use media, visual literacy and technology skills to create products that express understanding</td>
<td>• Database (±1 week / 4 hours)
• Formatting techniques to fields, records, tables, forms, queries, reports
• Integration with other packages
• Problem solving using database
• Troubleshooting database</td>
</tr>
<tr>
<td>Word Processing (±½ week / 2 hours)
• Mail Merge
- Envelopes and labels
• Integration with other packages</td>
</tr>
<tr>
<td>Communications (±½ week / 2 hours)
• Evaluate websites – basic areas
- Navigation and usability
- What does the URL tell you?
• New trends and technologies
• Planning and designing communication solutions for specific scenarios.</td>
<td>Communications (Practical) (±½ week / 2 hours)
• Managing e-mail:
- Organise using e-mail folders
- Sort by, flag, prioritise
- Distribution lists, message rules
• Register a Web-based e-mail address</td>
</tr>
<tr>
<td colspan="2">Content using case studies (±1 week / 2 hours)
Consolidate content, concepts and skills using case studies to:
• identify general hardware configuration of a computer in terms of the processor, memory and hard drive size
• understand computers and their uses
• understand how technology helps one to operate more efficiently, effectively and more accurately
• know how to use computers as tools to access information and to communicate with others around the world
• make better buying decisions – interpret advertisements and make judgements about quality and usefulness when buying equipment, software
• know how to fix ordinary computer problems and deal with challenges that arise with utilising computers
• know how to use the Internet and e-mail
• make informed decisions and choices in selecting communication devices and modes of communications for a given scenario
• know what kind of computer uses can benefit them and advance them in whatever work they do / career path they will follow
• know how to protect themselves against online villains and threats.
• know how to apply digital tools to communicate, gather, analyse, use information and solve problems
• understand technology concepts, systems and operations
• recommend specific hardware / software for a specific scenario</td>
</tr>
<tr>
<td colspan="2">Information Management (±1½ weeks / 6 hours)
• Reinforce content, concepts and skills in finalising PAT</td>
</tr>
<tr>
<td colspan="2">Social Implications (±½ week / 2 hours)
Social issues applicable to the above content
• Social engineering tricks such as phishing
• Information accuracy, data protection, threats, computer misuse
• Acceptable use policies of schools, Internet and networked services
• Document sources obtained electronically, e.g. website addresses, plagiarism
• Protecting oneself when online – online harassment, stalking and bullying, malware and security software, e-commerce and e-banking (HTTPS, etc.), social network sites, chat rooms, etc.
• Why anti-virus and anti-spyware programs need to be updated and how they function
• Different software settings in terms of how it effects the ease of use of the interface, e.g. for physically challenged, elderly users
• New physical environments with respect to ergonomics
• Usability – definition and usability features in operating system</td>
</tr>
<tr>
<td colspan="2">Assessment (PoA): Practical Assessment Task + 1 Examination – 1 Practical Paper + 1 Theory Paper 1</td>
</tr>
<tr>
<td colspan="2">Promotion Mark: Convert term marks to 25%, Convert PAT mark to 25%, Convert Paper 1 to 25%, Convert Paper 2 to 25%</td>
</tr>
</table>

4.3 Grade 12

Term 1

General concepts (±½ week/ 2 hours)

Types of computer systems

- Personal, SOHO, mobile, business
- Role and use of data, information, knowledge, conclusion / decision as part of information system
- Examples of computer usage
- Reasons for using computers:
  - Saving paper, time, labour, communication costs, efficiency, accuracy, reliability, affect on time and distance, global communication including social networks and Web tools such as blogs, wikis, etc., social engineering, ubiquity of devices connected to computers, e.g. ATMs, phones
- Advantages and limitation of computers, e-communication
- Software as a service
- Convergence, pervasiveness

Spreadsheet (±2 weeks / 8 hours)

- Reinforce content, concepts and skills from Grade 10 and 11
- More complex functions such as nested if, vlookup and variations of known functions, e.g. roundup, rounddown
- Basic date and time calculations

Word Processing (±1 week/ 4 hours)

- Import data collected via electronic forms to table
- Add-ins

Database (± 4 weeks / 16 hours)

- Reinforce concepts from Grade 11
- Design reports – grouped
- Group headers and footers
- Calculations in groups such as sum, avg, count, max, min
- Add fields with calculations in queries, reports
- Data validation techniques
- Queries using and, or, not, wildcards(*), IS Null operator
- Collect Data
- Relational Database (basic)
  - 1:M relationship using two tables
  - Why use more than one table?
- Foreign key

Hardware (±2 weeks /8 hours)

- Advantages and limitations of input, output, storage, communication devices and application software
- Input, output, storage, processing and communication as part of the information processing cycle
- Integration of input modes to enhance productivity / efficiency
- Making buying decisions: What to buy? Why?
- Keyboard and mouse: Ergonomic considerations, wireless vs. cabled
- Digital cameras, webcams, scanners
  - Resolution and image quality, size
  - Software to use with these such as OCR
- Voice recognition
- Printers
  - Which printer is best for task? Why?
  - Budget, speed, colour, cost per page, graphics capability, photo printing, paper type and size, system compatibility, future needs, wireless capability, mobility
  - Resolution, economical and environmental considerations
- Storage: Capacity, volatility, durability
- Processing
  - Making informed decisions regarding the basic components of the system unit e.g. buying a system that will be suitable for running particular software (system requirements) regarding processor and RAM
  - Interpret specifications regarding CPU and RAM (basic)
- Productivity, efficiency, accuracy, accessibility issues
- Risks associated with input devices such as key logging software
- Suggest input, output, storage, communication devices as well as CPU and RAM including specifying basic specifications in terms of processor, memory and storage for home user, SOHO user, mobile user, power user, disabled user
- Fix ordinary problems such as sticky mouse, scanning, disk errors, e.g. defrag, resolution, non-responding programs, printing problems, install modem, checking amount of used or free space on storage medium
- Identify new technology, their uses and merit

Social Implications (±½ week/ 2 hours)

- Social issues applicable to the above content
- Impact on society such as social networking, reasons for using computers, environmental issues, user-centered design in software applications such as website, database form, presentation

Assessment (PoA): 1 Practical Test + 1 Theory Test

Reporting: Add raw marks and totals and convert to % for term mark.

Term 2

<table>
<tr>
<td>Application Software (±½ week / 2 hours)
• Software that will enhance accessibility, efficiency, productivity such as voice recognition software, note-taking software and why / how?
• Usability (HCI) issues
• Uses of common applications such as word processing, spreadsheet, database, presentation, e-mail, Web browsers, PIMs, Web tools, etc.
• Potential for human error when using software / technology
• Web-based software vs. installed software
- Advantages, disadvantages
• Interpret system requirements
• Common software problems and upgrades such as obtaining and installing software improvements (patches), updates, read-only files, etc.
• Risks of using flawed software
• Which software to use where and when</td>
<td>Database (± 2 weeks / 8 hours)
• Relational database (basic)
- 1:M relationship using more than two tables
• Queries using two tables</td>
</tr>
<tr>
<td rowspan="2">Networks (±1 week / 4 hours)
• Wide area networks (WAN)
- Definition, purpose, role
• Internet as an example of a WAN –
- What is the Internet and World Wide Web
- What is the Internet used for?
• Internet services: e-mail, feeds, instant messaging, VoIP, FTP, mailing list, chat rooms
• Make buying and informed decisions regarding internet connection and access
- Dial-up, broadband and typical characteristics
- Modem / router, types of connections, e.g. telephone, ISDN, ADSL, wireless technologies, including their advantages and disadvantages
- ISP, Internet services
- Netiquette
- Software associated with Internet
- Access points
• Data transmission speed - measured in kilobits per second(kbps) and megabits per second (mbps)
• CAP, bundle
• Concept of broadband and bandwidth
• Downloading / uploading
• Setting up an Internet connection</td>
<td>Spreadsheets (±1½ week / 6 hours)
• Text functions such as left, right, mid, concatenate, len, value, find</td>
</tr>
<tr>
<td>Word Processing (± ½ week / 2 hours)
• Reinforce content, concepts and skills from Grade 10 and 11
• Mail merge – different data sources e.g. e-mail list
• File management: Prepare, publish</td>
</tr>
<tr>
<td colspan="2">Information Management (± 2 weeks / 8 hours)
• Practical Assessment Task
- Reinforce Information Management skills
- Use information and data gathered: Processing and analysing</td>
</tr>
<tr>
<td colspan="2">Social Implications (±½ week / 2 hours)
• Social issues applicable to the above content
- Computer crimes such as hardware, software, information, identity, bandwidth theft, theft of time and services
- Internet-related fraud scams
- Internet attacks
- Taking over PCs, e.g. botnets, zombies
- Right to access vs. right to privacy
- Misuse of personal information
- Computer criminals
- Network use policies and practices
• Security issues such as spyware, adware, popups, key logging
• Safeguards against criminals, viruses and threats</td>
</tr>
<tr>
<td colspan="2">Assessment (PoA): 1 Assignment + 1 Examination – 1 Practical Paper + 1 Theory Paper</td>
</tr>
<tr>
<td colspan="2">Reporting: Add raw marks and totals and convert to % for term mark.</td>
</tr>
</table>

Term 3

Database (±1 week / 4 hours)
- Consolidate and reinforce content, concepts and skills from Grade 10 and 11
- Create a database for a given scenario using relational tables (1:M)

Spreadsheets (±1 week / 4 hours)
- Consolidate and reinforce content, concepts and skills from Grade 10 and 11
- Identify appropriate functions (date and time, maths, statistical, text, logical, lookup and reference) to suit scenario and solve problem
- Use more advanced combinations of functions and formulas
- Edit, format and change charts including changing the scale on the axes, minimum and maximum values, re-labelling axes, creating stacked bar and column graphs, using a graphic, etc.
- Appropriate graph for a given scenario

Word Processing (±1 week / 4 hours)
- Consolidate and reinforce content, concepts and skills from Grade 10 and 11
- Documents using style focusing on aspects such as page layout that includes advanced word processing techniques and techniques of integration with other software including linking objects

System Software and Computer Management (±1½ weeks / 6 hours)
- Role of the operating system:
  - Starting the computer
  - Provide user interface
  - Manage programs
    - Concept of single user vs. multiple users including examples
    - Concept of multitasking including examples
    - Concept of Task Manager (Windows)
- Management of files: File types, properties, file attributes such as read-only and hidden as well as metadata such as the author and title properties of documents, import, export, search, conversion
- General housekeeping tasks such as scheduling jobs, configuring devices, administrating security, updating
- Operating system utilities such as
  - file management, schedule / update, coordinate tasks – concept of spooling when printing
  - compress / decompress files and folders, security features such as access control, control of spyware, adware, firewall
- Stand alone utility programs such as antivirus programs, spyware removers, internet filters
- Function / purpose / role; How / where / when to use
- General troubleshooting using utility software, e.g. interpret memory usage to see why computer is slow
- Factors that influence performance such as RAM, type of processor, processor speed, number of applications running, caching, influence of malware – basic concepts / non-technical

Communications (±1 week / 4 hours)

Practical: e-mail – calendar, contacts, tasks, archive
Blogging: Register blog space, publish blog through

- Types of digital communications such as video conferencing
  - Advantages and disadvantages, good practices
- Categorise Internet uses used for one-way communication, private and group communication, collaboration
- Typical features of Web browsers – bookmarks, history, home page settings, pop-up, blocking Web, caching
- Uses of computer communications such as:
  - Internet, e-mail, Web, instant messaging, VoIP, RSS feeds, blogs / vlogs, podcast / vodcast, FTP, HTTP, HTTPS, video / Web conferencing, extranets, wikis, GPS, file sharing, remote access, streaming media, multimedia, content sharing, social networks
  - Strengths and weaknesses, advantages, disadvantages and limitations, good practices
- Communication devices: Smart phones and other personal mobile devices
- New trends and technologies

Information Management (±2 weeks / 8 hours)
- Practical Assessment Task – Report writing and presentation

Social Implications (±½ week / 2 hours)
- Social issues applicable to the above content:
- Effect and use of social networking sites and technologies such MySpace, FaceBook and Twitter and virtual communities such as Second Life
- The effect of technology on the global community
  - Distributed computing power, decision making, telecommuting / teleworking, safeguards against computer crimes, threats and criminals, driving forces behind ICT inventions, cultural impact
- How technology can benefit or harm society
- Use information sources from around the world
- Information overload

Assessment (PoA): 1 Test + 1 Examination – 1 Practical Paper + 1 Theory Paper

Reporting: Add raw marks and totals and convert to % for term mark.

Term 4

Documents (Word processor, spreadsheet, presentations, database) (±3 weeks / 12 hours) • Use integrated software effectively and efficiently to reproduce and create documents that incorporate text, graphics and data • Manipulate graphics and text within documents • Use integrated software to create and design documents for specific purposes • Apply general principles of layout and design to a document process • Emphasise information using techniques such as placement, colour • Create documents by customising templates • Use media, visual literacy and technology skills to create products that express understanding
Case Studies – All Topics (±3 weeks / 12 hours) Consolidate content, concepts and skills using case studies to: • Identifying general hardware configuration of a computer in terms of the processor, memory and hard drive size • understand computers and their uses • know how to use computers as tools to access information and to communicate with others around the world • make better buying decisions – interpret advertisements and make judgements about quality and usefulness when buying equipment, software • know how to fix ordinary computer problems and deal with challenges that arise with utilising computers • know how to use the Internet and e-mail • know how to use application packages, when to use which one • make informed decisions and choices in selecting communication devices and modes of communications for a given scenario • know what kind of computer uses can benefit them and advance them in whatever work they do / career path they will follow • know how to protect themselves against online villains and threats. • know how to apply digital tools to communicate, gather, analyse, use information and solve problems • understand technology concepts, systems and operations and how it helps to operate efficiently, effectively and accurately • recommend specific hardware / software for a specific scenario • know about upgrading and how to integrate equipment with new products / technology • understand when to upgrade, when to buy new equipment or software and make informed decisions
External Examination: Practical Assessment Task + 1 Examination – 1 Practical Paper + 1 Theory Paper 1
SBA Mark: Add raw marks and totals for assessment tasks from term 1 to term 3 and convert to 25%

SECTION 4

Assessment

4.1 Assessment in Computer Applications Technology

Daily assessment

Daily assessment is part of the process of learning that takes place in the classroom and should be taken into account when planning the work schedule and lessons.

As daily assessment occurs in every lesson it can take the form of informal assessment tasks at the beginning of, during or at the end of the lesson. This includes learning activities such as class work or homework exercises where learners are provided with an assessment sheet for the exercise that is based on a list of competencies or criteria that they can use as a formative learning experience. As learners measure their knowledge and skills against these competencies and criteria, their strengths and weaknesses are reflected and should be used to enhance the learning process.

Daily assessment tasks should be used to scaffold the attainment of content, concepts and skills and should be the stepping stones to the formal tasks in the programme of assessment. These informal daily tasks are not recorded and are not taken into account for promotion.

Daily assessment should be reflected in the lesson planning and should not be seen as separate from the learning activities taking place in the classroom.

Formal assessment

In addition to daily assessment, teachers should develop a year-long formal programme of assessment for each grade. In Grades 10 and 11 the programme of assessment consists of assessment tasks undertaken during the school year and an end-of-year examination. The marks allocated to assessment tasks completed during the school year will be 25%, and the end-of-year examination mark will be 75% which includes the Practical Assessment Task (PAT).

In Grade 12, the Programme of Assessment consists of tasks undertaken during the school year and counts 25% of the final Grade 12 mark. The other 75% is made up of externally set assessment tasks, including the Practical Assessment Task (PAT).

The marks achieved in each assessment task in the formal programme of assessment must be recorded and included in formal reports to parents and school management teams. These marks will determine if the learners in Grades 10 and 11 are promoted. In Grade 12, these marks will be submitted as the internal continuous assessment mark.

The following section provides an overview of the programme of assessment in Computer Applications Technology.

4.2 Assessment components and weighting

Grade 10 and 11

Programme of Assessment			
Formal Assessments	End-of-Year Examination		
25%	75%		
SBA – During Year	Practical Assessment Task	End-of-Year Exam Papers (50%)	
25%	25%	25%	25%
• 4 tests (2 theory and 2 practical) • 1 exam (mid-year) • 1 assignment	Information management project based on providing a solution to a specific scenario by using the applications as indicated under Solution Development	Written exam 2 – 3 hours Theory aspects of all content, concepts and skills of all topics	Practical exam 3 hours Solution Development
SBA per Term			
Term 1: 1 practical test + 1 theory test	Term 2: 1 assignment (Information Management: PAT – Task definition and data collection) 1 examination (2 papers: 1 theory + 1 practical)	Term 3: 1 practical test + 1 theory test	Term 4: 1 examination 2 papers: 1 theory + 1 practical Plus PAT
		Practical Assessment Task (PAT)	
Term Mark (Terms 1 – 3): Each term, add raw marks and totals and convert to % for term mark. *Promotion Mark: Add raw marks and totals for assessment tasks from term 1 to term 3 and convert to 25%, Convert PAT mark to 25%, Convert Paper 1 to 25%, Convert Paper 2 to 25%*			

Grade 12

Programme of Assessment			
Formal Assessments	End-of-Year Examination		
25%	75%		
SBA	Practical Assessment Task	End-of-Year Exam Papers (50%)	
25%	25%	25%	25%
• 4 tests (2 theory and 2 practical) • 2 exams (mid-year and trial)	Information management project based on providing a solution to a specific scenario by using the applications as indicated under Solution Development	Written exam 3 hours Theory aspects of all content, concepts and skills of all topics	Practical exam 3 hours Solution Development
SBA per Term			
Term 1: 1 practical test + 1 theory test	Term 2: 1 assignment (Information Management: PAT – Task definition and data collection) + 1 examination (2 papers: 1 theory + 1 practical)	Term 3: 1 test + 1 examination (2 papers: 1 theory + 1 practical)	Term 4: 1 external examination 2 papers: 1 theory + 1 practical plus Practical Assessment Task
	Practical Assessment Task (PAT)		
Term Mark (Terms 1 – 3): Each term, add raw marks and totals and convert to % for term mark. *SBA Mark: Add raw marks and totals for assessment tasks from term 1 to term 3 and convert to 25%*			

Note:

A test in the programme of assessment should not be made up of several smaller tests. Each test should cover a substantial amount of content and should be set for 45 – 60 minutes each and reflect the different cognitive levels as set out for exam papers.

4.3 Practical Assessment Task (PAT)

The Practical Assessment Task is a project that assesses the learner's individual interaction with data and information and the way in which he or she processes and manipulates that as well as the way he or she presents the information. The information will finally be presented in a number of documents. These must be made in the four application programs studied.

The CAT PAT comprises two components / stages:

(Preparation and planning for the PAT are undertaken through the assignment in term 2)

- Finding information and use of information and data gathered: Determining information needs, processing and analysis
- Use of information and data: Synthesis and reporting

Evidence of the process must be provided in a series of draft documents.

In Computer Applications Technology the PAT counts 25% of the total promotion / certification mark for the subject. It is implemented across the school year and should be undertaken as one extended task, which is broken down into different phases or a series of smaller activities.

In Grade 12, the criteria for the Practical Assessment Task are externally set, internally administered and marked and externally moderated.

4.4 External examinations (Grade 12)

Paper 1: One three-hour practical paper of 180 marks (25% of the total marks for the subject)

This will be a practically oriented paper covering questions on Solution Development.

To successfully complete this paper, each learner must have access to his or her own computer in the exam room. Provision needs to be made for sufficient computers to enable the examination to be completed in ***at most two sittings***.

This paper assesses the practical skills pertaining to Solution Development, i.e. the application packages studied, viz. word processing, presentations, spreadsheets and databases. These skills will be assessed in an integrated manner based on real-life scenarios. File management and problem solving will form aspects of the assessment of the application questions in this paper.

The paper will comprise five interchangeable sections questions based on a scenario and will cover the following content areas in an integrated manner:

- Word processing (approx 45 marks)
- Spreadsheets (approx 45 marks)
- Databases (approx 45 marks)
- Presentations (approx 15 marks)
- General (approx 30 marks)

Aspects of file management will be included as part of the questions.

The learner will not be required to enter large amounts of data. The required data could be retrieved from the data disk or imported from documents such as a text file, word processing document, a database table or a spreadsheet.

Paper 2: One three-hour written paper of 150 marks (25% of the total marks for the subject)

The paper will cover all theory aspects of all knowledge (content, concepts and skills) of all topics, including elements of Solution Development (viz. application packages and file management).

The table below gives a breakdown of the structure of the question paper:

SECTION	DESCRIPTION
A	• Short questions (± 35 marks) A range of multiple-choice questions covering all topics (± 10 marks) Modified true and false (± 15 marks) Other types, e.g. matching columns (± 10 marks)
B	• Question 3: Systems Technologies (± 25 marks) Questions related to the knowledge (content, concepts and skills) in the systems technologies topic area.
	• Question 4: Internet and Network Technologies (± 15 marks) Questions related to the knowledge (content, concepts and skills) in the Internet, e-communication and network technology topic areas.
	• Question 5: Information Management (± 10 marks) Questions related to the management of information.
	• Question 6: Social Implications (± 15 marks) Questions are aligned to the concepts and skills in the Social Implications topic area, viz. influence of ICTs on society with reference to health, social, ethical, security and environmental issues.
	• Question 7: Solution Development (± 10 marks) Questions are aligned to the solution development topic area, namely the content, concepts and skills applied in the applications packages.
C	• Question 8: Integrated Scenario (± 40 marks) This section is based on a single scenario and will be aligned to all the topics.

Content to be covered

Assessment addresses the content as set out in this document. Due to the conceptual progression of the content across the grades, content and skills from Grade 10 – 12 will be assessed in the external papers at the end of Grade 12.

A list of emerging technologies to be covered for examination purposes each year will be provided to schools by the end of the previous year.

Note:

Examination papers must reflect the following cognitive levels:

Lower order *(Knowledge / Remembering)* *(Routine procedures)*	Middle order *(Understanding / Applying)* *(Multi-step procedures)*	Higher order *(Analysing / Evaluating / Creating)* *(Problem-solving)*
30%	40%	30%