education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL CURRICULUM STATEMENT GRADES 10-12 (GENERAL)

LEARNING PROGRAMME GUIDELINES

COMPUTER APPLICATIONS TECHNOLOGY

JANUARY 2008

CONTENTS

ACRONYMS

AS	Assessment Standard
ATM	Automatic Teller Machine
CASS	Continuous Assessment
CD-ROM	Compact Disk Read Only Memory
CPU	Central Processing Unit
DTP	Desktop Publishing
DVD	Digital Video Disk
EFT	Electronic Funds Transfer
EMR	Electromagnetic Radiation
FET	Further Education and Training
Gb	Gigabyte
GET	General Education and Training
Ghz	Gigahertz
GUI	Graphical User Interface
HCI	Human Computer Interaction
ICT	Information and Communication Technology
IT	Information Technology
ISP	Internet Service Provider
Kb	Kilobyte
LAN	Local Area Network
LO	Learning Outcome
LoLT	Language of Learning and Teaching
LPG	Learning Programme Guidelines
LTSM	Learning and Teaching Support Material
Mb	Megabyte
Mhz	Megahertz
MICR	Magnetic Ink Character Recognition
NCS	National Curriculum Statement
NSC	National Senior Certificate
OCR	Optical Character Recognition
PAN	Personal Area Network
PC	Personal Computer
PoA	Programme of Assessment
RAM	Random Access Memory
ROM	Read Only Memory
RSI	Repetitive Stress Injury
SAG	Subject Assessment Guidelines
KSV	Knowledge, Skills and Values
Tb	Terabyte
USB	Universal Serial Bus
VCR	Video Cassette Recorder
WAN	Wide Area Network

SECTION 1

INTRODUCTION

1.1 INTRODUCING THE NATIONAL CURRICULUM STATEMENT

1.1.1 BACKGROUND

In 1995 the South African government began the process of developing a new curriculum for the school system. There were two imperatives for this. First, the scale of change in the world, the growth and development of knowledge and technology and the demands of the 21st Century required learners to be exposed to different and higher level skills and knowledge than those required by the existing South African curricula. Second, South Africa had changed. The curricula for schools therefore required revision to reflect new values and principles, especially those of the Constitution of South Africa.

The first version of the new curriculum for the General Education Band, known as Curriculum 2005, was introduced into the Foundation Phase in 1997. While there was much to commend the curriculum, the concerns of teachers led to a review of the Curriculum in 1999. The review of Curriculum 2005 provides the basis for the development of the Revised National Curriculum Statement for General Education and Training (Grades R – 9) and the National Curriculum Statement for Grades 10–12.

1.1.2 THE NATIONAL CURRICULUM STATEMENT

The National Curriculum Statement consists of 29 subjects. Subject specialists developed the Subject Statements which make up the National Curriculum Statement. The draft versions of the Subject Statements were published for comment in 2001 and then re-worked to take account of the comments received. In 2002 24 subject statements and an overview document were declared policy through Government Gazette. In 2004 five subjects were added to the National Curriculum Statement. The National Curriculum Statement now consists of the Subject Statements for the following subjects:

- Languages – 11 official languages (each counted as three subjects to cater for the three levels Home Language, First Additional Language and Second Additional Language); 13 non-official languages

- Mathematics; Mathematical Literacy; Physical Sciences; Life Sciences; Computer Applications Technology; Information Technology

- Accounting; Business Studies; Economics

- Geography; History; Life Orientation; Religion Studies

- Consumer Studies; Hospitality Studies; Tourism

- Dramatic Arts; Dance Studies; Design; Music; Visual Arts

- Agricultural Sciences, Agricultural Management Practices, Agricultural Technology

- Civil Technology; Mechanical Technology; Electrical Technology; Engineering Graphics and Design

1.1.3 NATIONAL SENIOR CERTIFICATE

The *National Senior Certificate: A Qualification on Level 4 of the National Qualifications Framework (NQF)* provides the requirements for promotion at the end of Grades 10 and 11 and the awarding of the National Senior Certificate at the end of Grade 12. This document replaces two of the original National Curriculum Statement documents: the *Overview* and the *Qualifications and Assessment Policy Framework.*

1.1.4 SUBJECT ASSESSMENT GUIDELINES

The Subject Assessment Guidelines set out the internal or school-based assessment requirements for each subject and the external assessment requirements. In addition, the *National Protocol for Recording and Reporting (Grades R-12)* (an addendum to the policy, *The National Senior Certificate*) has been developed to standardise the recording and reporting procedures for Grades R to 12. This protocol came into effect on 1 January 2007.

1.2 INTRODUCING THE LEARNING PROGRAMME GUIDELINES

1.2.1 PURPOSE AND CONTENT OF THE LEARNING PROGRAMME GUIDELINES

The Learning Programme Guidelines aim to assist teachers and schools in their planning for the introduction of the National Curriculum Statement. The Learning Programme Guidelines should be read in conjunction with the National Senior Certificate policy and the National Curriculum Statement Subject Statements.

Section 2 of the Learning Programme Guidelines suggests how teaching the particular subject may be informed by the principles which underpin the National Curriculum Statement.

Section 3 suggests how schools and teachers might plan for the introduction of the National Curriculum Statement. The Department of Education encourages careful planning to ensure that the high skills, high knowledge goals of the National Curriculum Statement are attained.

The Learning Programme Guidelines do not include sections on assessment. The assessment requirements for each subject are provided in the Subject Assessment Guidelines which come into effect on 1 January 2008.

1.2.2 WHAT IS A LEARNING PROGRAMME

INTRODUCTION

A Learning Programme assists teachers to plan for sequenced learning, teaching and assessment in Grades 10 to 12 so that all Learning Outcomes in a subject are achieved in a progressive manner. The following three phases of planning are recommended:

- Phase 1 – develop a *Subject Framework* for grades 10 to 12

- Phase 2 – develop a *Work Schedule* for each grade

- Phase 3 – develop *Lesson Plans*

It is recommended that the teachers of a subject at a school or cluster of schools first put together a broad subject outline (Subject Framework) for the three grades to arrive at an understanding of the content of the subject and the progression which needs to take place across the grades (see Section 3.3.1). This will assist with the demarcation of content for each grade. Thereafter, teachers of the subject teaching the same grade need to work together to develop a year long Work Schedule. The Work Schedule should indicate the sequence in which the content and context will be presented for the subject in that particular grade (see Section 3.3.2). Finally, individual teachers should design Lesson Plans using the grade-specific Work Schedule as the starting point. The Lesson Plans should include learning, teaching and assessment activities that reflect the Learning Outcomes and Assessment Standards set out in the Subject Statements (see Section 3.3.3). Learning Programmes should accommodate diversity in schools and classrooms but reflect the core content of the national curriculum.

An outline of the process involved in the design of a Learning Programme is provided on page 6.

DESIGNING A LEARNING PROGRAMME

A detailed description of the process involved in the design of a Learning Programme is provided in Sections 3.3.1 – 3.3.3 of the Learning Programme Guidelines. The first stage, the development of a Subject Framework does not require a written document but teachers are strongly advised to spend time with subject experts in developing a deep understanding of the skills, knowledge and values set out in the Subject Statements. The quality and rigour of this engagement will determine the quality of teaching and learning in the classroom.

Once the Subject Framework has been completed, teachers should develop Work Schedules and Lesson Plans. Examples of Work Schedules and Lesson Plans are provided in the Learning Programme Guidelines. Teachers are encouraged to critically engage with these formats and develop their own.

Developing a Subject Framework (Grades 10-12)

Planning for the teaching of subjects in Grades 10 to 12 should begin with a detailed examination of the scope of the subject as set out in the Subject Statement. No particular format or template is recommended for this first phase of planning but the steps recommended should be used as a checklist.

Although no prescribed document is required for this stage of planning, school-wide planning (timetables, requisitioning, teacher development, classroom allocation) as well as the development of grade-specific work schedules would benefit from short documents which spell out:

- The scope of the subject – the knowledge, skills and values; the content; the contexts or themes; electives etc. to be covered in the three grades for each subject
- A three-year assessment plan for the subject
- The list of LTSM required for the subject

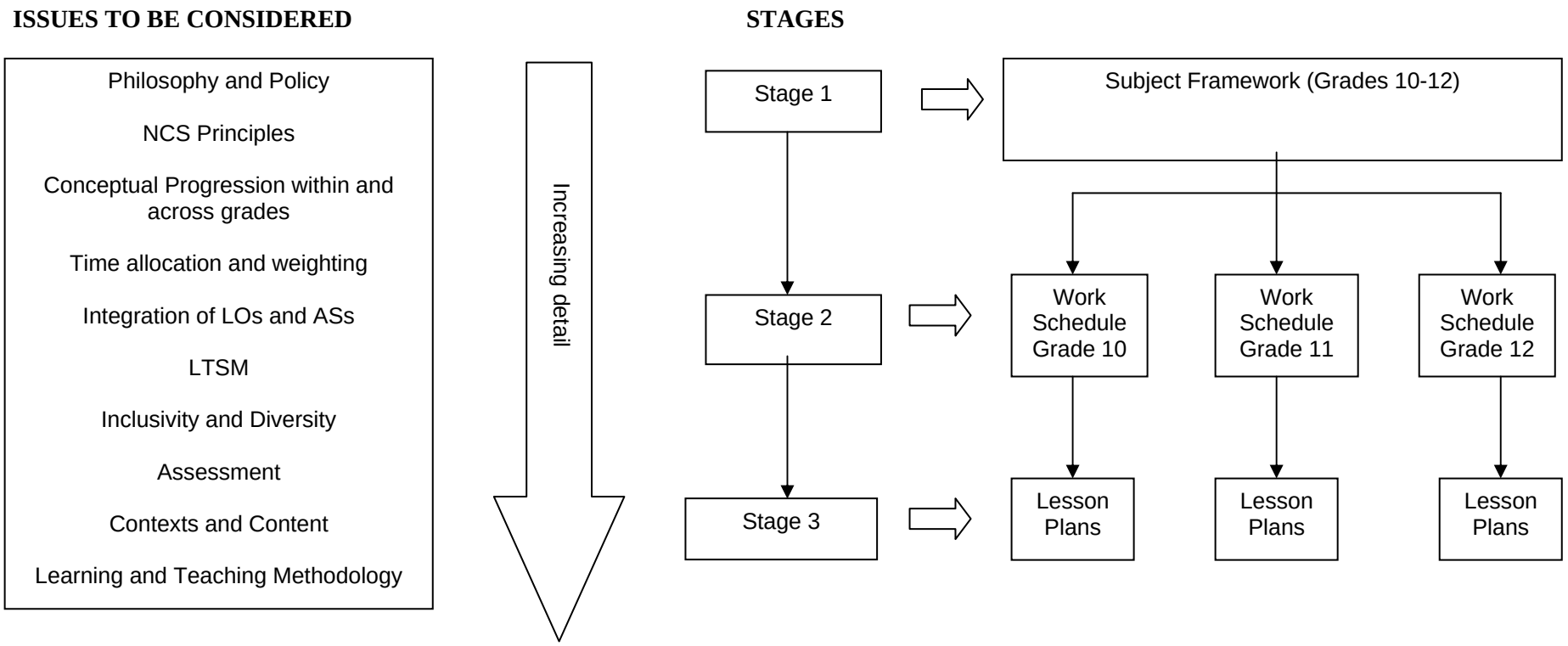
Designing Work Schedules

This is the second phase in the design of a Learning Programme. In this phase teachers develop Work Schedules for each grade. The Work Schedules are informed by the planning undertaken for the Subject Framework. The Work Schedules should be carefully prepared documents that reflect what teaching and assessment will take place in the 36-40 weeks of the school year.

Designing Lesson Plans

Each grade-specific Work Schedule must be divided into units of deliverable learning experiences, that is, Lesson Plans. Lesson Plans are not equivalent to periods in the school timetable and each contains a coherent series of teaching, learning and assessment activities. A Lesson Plan adds to the level of detail for each issue addressed in the Work Schedule. It also indicates other relevant issues to be considered when teaching and assessing a subject.

FIGURE 1: RELATIONSHIP BETWEEN THE 3 STAGES OF PLANNING WHEN DEVELOPING A LEARNING PROGRAMME



SECTION 2

INTRODUCING COMPUTER APPLICATIONS TECHNOLOGY

(Read this Section in conjunction with the *Computer Applications Technology National Curriculum Statement Grades 10-12 [Schools]).*

2.1 WHAT IS COMPUTER APPLICATIONS TECHNOLOGY?

Computer Applications Technology is a new subject. It draws from aspects of subjects such as Computyping and Computer Studies. It further originates from and is a subset of the broader knowledge domain of 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.

ICTs develop and change rapidly, and as a knowledge domain include the following broad knowledge categories that impact on Computer Application Technology:

- Personal computer hardware and software
- Networked environments
- Use of ICTs to solve problems
- Impact of ICTs on society and the environment
- ICTs and legal, ethical and security issues
- Communication technology

2.2 WHAT IS THE PURPOSE OF COMPUTER APPLICATIONS TECHNOLOGY?

Computer Applications Technology is learning about ICTs, working with ICTs and using ICTs in an end-user environment to solve problems relating to the processing, presentation and communication of information. It will teach learners:

- Technology skills – the ability to use the facilities of technology in an end-user environment and operate it purposefully and effectively
- Information skills – the ability to access, retrieve, store, organise, manipulate, evaluate, maintain, analyse, interpret, present and communicate information, as well as using end-user computer applications and ICTs to process and present information
- Problem-solving skills – the application of an authentic methodology for solving problems in a range of cases
- Higher order thinking skills – the ability to reason and reflect, pose and answer questions, interpret and adjust solutions and transfer skills from familiar to unfamiliar context
- Creative skills – the ability to design, develop and produce creative and elegant solutions
- Collaborative skills – the ability to develop multi-facetted and multi-levelled systems through collaborative teamwork
- Lifelong learning skills – the ability to achieve and maintain the knowledge, skills and values required in a dynamic knowledge domain

Computer Applications Technology will equip learners with:

- Knowledge and understanding – conceptual knowledge plus applied knowledge regarding hardware, software, networked environments, social and environmental issues as well as legal, ethical and security issues
- Applied competence – the ability to implement solutions using end-user application software together with productive methods, procedures and techniques
- Communication competence – using communication modes and tools including Internet and email
- Information management – the process of research and information management
- Decision making skills – the ability to make informed decisions based on a proper knowledge and understanding of a situation or subject

2.3 WHAT IS THE RELATIONSHIP BETWEEN COMPUTER APPLICATIONS TECHNOLOGY AND THE NATIONAL CURRICULUM STATEMENT PRINCIPLES?

The National Curriculum Statement lists nine *principles* that must inform all teaching and learning.

2.3.1 Human rights, inclusivity and environmental and socio-economic justice

Computer Applications Technology encourages the effective use of information and communication technology to promote and protect human rights within a socio-economic environment.

2.3.2 Outcomes-based education

Outcomes-based education considers the process of learning and the Learning Outcomes achieved to be as important as mastering the content. Learning Outcomes and Assessment Standards for Computer Applications Technology are derived from the Critical and Developmental Outcomes. The three Learning Outcomes of Computer Applications Technology emphasise the skills, knowledge, values and understanding to be achieved.

All three Learning Outcomes encourage an interactive and generative approach.

2.3.3 Integration and applied competence

Integration of Assessment Standards within and across the three Learning Outcomes within Computer Applications Technology enhances the learners' language, research, thinking, creativity, problem-solving and decision making skills. At the same time, applied skills acquired within the subject enable the learners to transfer these skills to other subjects. Content is studied at greater complexity and depth in each grade resulting in the development of a higher level of skills. The use of various end-user computer application programmes to process data and present information in user-friendly environments leads to integration across various subjects.

Applied competence aims at integrating three distinct competencies, namely, practical, foundational and reflective competences. In adopting integration and applied competence, Computer Applications Technology seeks to reward the integrated learning of theory, practice and reflection.

2.3.4 Credibility, quality, efficiency and relevance

During the development of the National Curriculum Statement for Computer Applications Technology, a number of international publications and various Internet websites were consulted to align the curriculum with internationally acceptable standards as well as with industry standards. At present, due to the prevalence of electronic and technologically advanced working environments, the subject is particularly relevant.

To stay relevant, the subject needs to keep up to date with the dynamic evolution in the field of end-user computer applications and computer technology. New applications, methods, tools and technology are continually developed. Where these improve on current applications, methods, tools and technology, the subject needs to accommodate them to remain relevant.

2.3.5 High levels of knowledge and skills for all

The knowledge and skills acquired in Computer Applications Technology can be transferred to other areas to provide all learners, including those who experience barriers to learning, with the ability to apply these skills to diverse situations and to take advantage of learning opportunities to improve their employment and entrepreneurship opportunities.

Computer Applications Technology equips learners with 21st century skills:

- Digital-age literacy
- Effective communication
- High productivity
- Inventive thinking

2.3.6 Articulation and portability

The Assessment Standards in the Subject Statements were formulated to correspond to the unit standards of appropriate National Qualifications Framework levels. Computer Applications Technology builds on the skills, knowledge and values learners acquired from the General Education and Training band and prepares learners for study at Higher Education Institutions or the work place.

2.3.7 Progression

Progression refers to the process of developing more advanced and complex knowledge and skills. The Computer Applications Technology National Curriculum Statement shows progression from one grade to another. Each Learning Outcome is followed by an explicit statement of what level of performance is expected for the Learning Outcome. Assessment Standards are arranged to show progression and an increased level of expected performance per grade. The content and context of each grade also shows progression to increasingly more complex demands.

2.3.8 Social transformation

The imperative to transform South African society stems from the need to address the imbalances of the past, specifically in the field of Information and Communication Technology. In Grade 10, Learning Outcome 1, Assessment Standard 5, requires learners to engage with the impact of information and communication technologies on local, national and global environments. Learning Outcome 1, Assessment Standard 5 in Grade 11 and Learning Outcome 1, Assessment Standard 5 in Grade 12 also address this issue.

2.3.9 Indigenous knowledge systems

Human Computer Interaction (HCI) in broad terms describes the manner and mode in which users interact with a computer. This covers broad areas such as language, communication and the use of symbols in facilitating computer communication. While HCI protocols are often determined by international developments, great care needs to be taken to incorporate local circumstances and indigenous knowledge systems by applying techniques suited and ideal to local circumstances.

Specific issues that can be addressed are:

Accessing indigenous knowledge

Most of the information that can be accessed via the Internet is sourced and grounded in the knowledge and value systems of the global community. These systems must not be used in a carte blanche fashion simply because they might be the most frequently used or accessed sources of information. Consequently, great care needs to be taken that local websites on the Internet are not marginalised. Suitable exemplars and tasks should be constructed to encourage learners to access local sources.

Indigenous terminology and the terminology of Computer Applications Technology

As most technological developments in the field of computing originate overseas, much of the associated terminology is imported with the technology. Learners need to be made aware of local synonyms, idioms and translations that may be substituted for terminology not necessarily indigenous. The word 'stiffy', for example, is not universally used. This extends to spelling and grammar conventions that differ from local conventions. Spelling check or programmes, for example, are often not developed with South African circumstances in mind and some words, both technical and non-technical, may differ in a South African context.

User interfaces

Most commercially available software packages make use of what has become a largely standardised method and mode of interface. These include icons and buttons that use imagery that not all indigenous users can immediately relate to. This applies to the terminology of Computer Applications Technology associated with the user interface, such as 'Recycle Bin'.

Local exemplars

It is desirable to contextualise content wherever possible by using examples and contexts that apply to the local environment. Scenarios, case studies and themes should be carefully devised so that they satisfy this requirement. The added benefit is that this will enhance the teaching-learning experience. Local innovators and applications of technology in a South African context should also be recognised.

2.4 PROFILE OF A COMPUTER APPLICATIONS TECHNOLOGY LEARNER ENTERING THE FURTHER EDUCATION AND TRAINING BAND

Learners who wish to study computer applications and their uses in a variety of situations are encouraged to take Computer Applications Technology.

The Computer Applications Technology learner should demonstrate the following qualities to excel in the subject:

- Sound communication skills
- Language proficiency
- Fine motor skills
- Logical and practical thinking skills
- Creativity
- Problem-solving skills
- Visual literacy
- A willingness to learn and apply skills in different situations
- A willingness to engage in lifelong learning

The Learning Outcomes for Computer Applications Technology have strong links with Learning Areas in the NCS for General Education and Training. (Refer to Table 2.1).

Table 2.1: Interpretation of Learning Outcomes to facilitate the progression from General Education and Training to Further Education and Training

General Education and Training Learning Areas	Learning Outcomes NCS Grades R - 9	Learning Outcomes in Computer Applications Technology
Technology	1, 3	1,2, 3
Economic and Management Sciences	3	2, 3
Mathematics	5	2, 3
Languages	5	2, 3
Natural Sciences	2, 3	1, 2, 3
Arts and Culture	1, 4	2, 3

Computer Applications Technology envisages that learners at the end of Grade 12 will be able to:

- Demonstrate a knowledge of relevant computer hardware, software and wide area network environments
- Demonstrate an understanding of trouble shooting simple end-user computer-related hardware and software problems
- Adequately manipulate files and folders
- Identify, describe and illustrate legal, ethical and security issues related to information technology
- Identify, discuss, value and illustrate issues related to the impact of ICTs on the environment and society in a global context
- Apply productive methods, procedures and techniques to accurately input data
- Apply advanced word processing techniques in various contexts
- Apply knowledge and skills of a spreadsheet programme in various contexts
- Apply knowledge and skills of a database programme in various contexts
- Apply knowledge and skills in various contexts by using any end-user computer application programme other than word processing, spreadsheet or database programmes
- Apply logical thinking to respond to challenges in a variety of contexts in the end-user computer application environment using techniques of integration
- Interpret written and electronic layout and editing instructions to produce accurate output in a competent fashion
- Communicate information effectively by selecting and using appropriate communication modes and tools
- Make informed decisions in the data collection process
- Apply logical thinking skills when processing information
- Formulate responses and present and communicate information in a professional fashion

2.5 RELATIONSHIP BETWEEN COMPUTER APPLICATIONS TECHNOLOGY LEARNING OUTCOMES AND CRITICAL AND DEVELOPMENTAL OUTCOMES

Education in South Africa is informed by the seven Critical Outcomes and five Developmental Outcomes that are derived from the Constitution of the Republic of South Africa Act no. 108 of 1996. These Critical and Developmental Outcomes describe essential characteristics of the type of South African citizen that the education sector envisages to produce. Therefore, the teaching styles and methodologies used and the learner activities and experiences the learners are exposed to should reflect these Critical and Developmental Outcomes.

The Critical Outcomes stipulate that learners should be able to:

Critical Outcome 1: Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.

Both Learning Outcomes 2 and 3 are geared towards effective and creative problem solving in a variety of contexts. This equips learners with higher order skills, such as analysis, synthesis and evaluation of problems and problem-solving skills. Lateral and critical thinking skills are emphasised. These call for teaching approaches and methodologies that do not merely involve a simple transfer of factual knowledge from teacher to learner. Learners, therefore, need to develop strategies and skills to solve problems.

Critical Outcome 2: Work effectively with others as members of a team, group, organisation and community.

Group work and peer assessment should form an integral part of the Computer Applications Technology curriculum. Teachers are encouraged not only to focus on individual learners producing skills but also to set group projects where appropriate. This creates alternative assessment opportunities and learners acquire the skills needed to work effectively in groups.

Critical Outcome 3: Organise and manage themselves and their activities responsibly and effectively.

A key aspect Computer Applications Technology is the opportunity for learners to develop a set of skills that can be applied throughout their lives. This includes logistic and time management skills, which are exercised and demonstrated by the learner's ability to complete tasks successfully and timeously and to collate data in an organised fashion.

Critical Outcome 4: Collect, analyse, organise and critically evaluate information.

Learning Outcome 3 deals specifically with the development of skills to locate, organise and critically and effectively communicate information. This Learning Outcome focuses on developing critical thinking and making informed decisions on the location, selection and appropriateness of a data source. Further Assessment Standards within this Learning Outcome are geared towards the learner being able to evaluate and organise information from multiple sources and organise data and information in a clear, concise and professional way.

Critical Outcome 5: Communicate effectively using visual, symbolic and/or language skills in the modes of oral and/or written presentation.

A number of Assessment Standards in Computer Applications Technology support this Critical Outcome as they provide for research and reporting activities. Some of these Assessment Standards address presenting and communicating information in a clear, intuitive, concise and professional fashion.

Critical Outcome 6: Use science and technology effectively and critically showing responsibility towards the environment and the health of others.

Assessment Standards within Learning Outcome 1 specifically deal with the learner being able to critically analyse and evaluate current legal, ethical and security issues related to information technology in an independent fashion and are able to comment critically on the global impact of information and communication technology on the environment and society.

Critical Outcome 7: Demonstrate an understanding of the world as a set of related systems by recognising that problem-solving contexts do not exist in isolation.

By using a variety of themes and realistic case studies, the learner will be exposed to situations that demonstrate the interdependence and interaction between various systems.

Over and above the Critical Outcomes, each learner's full personal development must be fostered and supported by the five Developmental Outcomes, which are:

Developmental Outcome 1: Reflect on and explore a variety of strategies to learn more effectively.

Learning Outcome 2 deals specifically with the ability of the learner to independently apply creative thinking in a variety of situations. This includes a variety of different learning opportunities through oral presentations, seminars, written work and practical work. In addition, Learning Outcome 3 encourages the learner to gather information from a variety of sources and process it effectively.

Developmental Outcome 2: Participate as responsible citizens in the life of local, national and global communities.

Learning Outcome 1 is geared towards the learner critically analysing and evaluating current legal, ethical and security issues related to information technology in an independent fashion. Learners are encouraged to critically commenting on the global impact of information and communication technology on the environment and society.

Developmental Outcome 3: Be culturally and aesthetically sensitive across a range of social contexts.

Learning Outcome 1 addresses the need for the learner to be able to identify and critically comment on both the positive and negative impacts of information and communication technology on the environment and society. This encompasses an understanding of, and sensitivity to, various social issues including an appreciation of indigenous knowledge systems. Skills developed in co-operative group work situations will further sensitise learners to gender, race and varying cognitive levels by interacting with a broad spectrum of learners.

Developmental Outcome 4: Explore education and career opportunities.

The essence of Computer Applications Technology is such that all Learning Outcomes address this specific Developmental Outcome. The subject is geared towards developing skills for lifelong learning and providing the learner with skills appropriate to higher education or moving into the workplace.

Learners need to be made aware of career opportunities that make use of computer technology skills either directly or indirectly. The rapid pace of change associated with the development of technology provides an almost unlimited scope for exploring new career and educational opportunities for further study. Learners should be encouraged to attend career exhibitions and to participate in organised visits to places of work and higher education and other training institutions. This will further enhance the learners' awareness of the myriad vocational and educational opportunities available to them.

Developmental Outcome 5: Develop entrepreneurial opportunities.

All the Learning Outcomes are geared towards providing the learner with a broad range of computing and problem-solving skills that will enable them to initiate and participate in a host of entrepreneurial opportunities. Learners should be encouraged to display their entrepreneurial skills

by using their operational knowledge and problem-solving skills at school, wherever possible. This will address both the shortage of trained hardware and software support personnel in the country, particularly in smaller urban and rural areas and expose learners to unique opportunities to develop entrepreneurial skills.

2.6 WAYS TO ACHIEVE COMPUTER APPLICATIONS TECHNOLOGY LEARNING OUTCOMES

2.6.1 What is the approach to teaching Computer Applications Technology and the learning content and achieving the Learning Outcomes?

Content in Computer Applications Technology is embedded in the integration of end-user computer application programmes. It is important that the subject has a generic approach to end-user computer application programmes. Textbooks should not be considered as the only source of content as they can become outdated. Other relevant resources, such as newspapers, magazines, journal articles, radio and television reports and Internet sites should be incorporated into the content. The content in the research and assessment tasks should reflect current issues that face South Africans.

Learners need to follow instructions correctly and lay emphasis on correct techniques and procedures in the application of functions. They need to be encouraged to:

- Use existing templates and designs available in off-the-shelf programmes
- Develop custom-made templates
- Use automatic functions to enhance efficiency
- Use a range of documents and applications to present information in a user-friendly way
- Develop problem-solving and decision-making skills

Due to the dynamic nature of information and communication technologies, the content needs to be flexible and responsive to change and allow for future technological or programme developments. It needs to be located within a broader context to accommodate work environments, study environments and common business practice. Content should as much as possible be related to real-life situations. Computer Applications Technology must take into account that learning occurs in context, is active, social and reflective. This can be achieved through various themes or case studies that will link content to real-world situations.

2.6.2 Interrelationships between Learning Outcomes and/or contexts

There are three Learning Outcomes in Computer Applications Technology. The three Learning Outcomes are integrated and should not be taught in any specific order. They should not be considered sequential as each one supports and underpins the other, e.g. when dealing with application software (Learning Outcome 2) concepts of file management (Learning Outcome 1) should be dealt with when documents are retrieved or saved. Skills, knowledge and values taught in Learning Outcome 2 will be applied when teaching the concepts and processes of Learning Outcome 3. This approach supports and expands learners' opportunities to attain skills, acquire knowledge and develop values across the curriculum.

2.6.3 How will the Learning Outcomes be used?

The Learning Outcomes focus on problem solving both in the electronic environment and within end-user computer application programs. The selection and use of an appropriate end-user computer application program and the integration of different end-user computer application programs to find

solutions related to processing and presenting information is very important. This includes the transfer of generic skills to new situations and contexts. Collaborative and individual efforts need to be emphasised. In order to use the end-user computer applications effectively, the user needs to be competent in the use of input devices, such as a keyboard, mouse, scanner or voice recognition system and output devices such as a printer, projector or speakers. Data validation and proofreading skills must be developed to ensure accurate output.

It is important to realise that there is usually more than one way to present information. Multiple approaches within the various programmes need to be promoted and the appropriate choices need to be encouraged.

Learning Outcome 1 focuses on the operational knowledge needed for an end-user to successfully understand, interpret and deal with ICT experiences and challenges that they might typically experience. This includes a thorough understanding of the generic concepts related to hardware, software and e-communications as well as developing insight to the socio-economic impact of technology on society as a whole.

Learning Outcome 2 focuses on the skilful use of application packages by understanding the underlying knowledge to be able to apply the correct procedures and techniques to produce solutions to a variety of problems seated in a real-life context. This includes the ability to assess and develop alternative solutions that are creative, efficient and user-friendly in a variety of scenarios via the development of flexible, professional, aesthetically pleasing solutions.

Learning Outcome 3 focuses on the research process and involves the ability to use a variety of processes to critically assess information, manage inquiry, solve problems, do research and communicate with a variety of audiences. It further involves the use of available technologies to locate information from different sources and collect it using relevant methods. The process includes the analysis, processing, evaluation, summarising and recording of information in useful electronic formats. The emphasis is on informed decision-making through the construction of personal knowledge and meaning and the presentation and communication of information in appropriate formats using the tools and skills of Learning Outcome 2.

2.6.4 What content will be covered and how will it be dealt with?

Skills applicable to all application packages:

- Open and close one or more documents
- Create a new document with or without using a template
- Save a document under a different name or in a different location or as a different type
- Use the help function and on-line help
- Change view types
- Enter and edit data
- Select data using a keyboard and/or a mouse
- Copy, move and delete selected information using copy and paste tools and methods
- Apply the basic font styles of bold, italics and underlining
- Change the font type, colour, size and effects (including subscript and superscript)
- Align to left, right and centre
- Find and replace
- Use a spell and grammar check
- Copy information or objects between applications (including OLE techniques)
- Input data from different formats
- Use the undo and re-do functions
- Change document orientation (portrait and landscape), margins and paper size

- Add headers and footers including page numbers, date, path and file name
- Proofread in terms of layout, presentation and accuracy
- Preview a selection to print
- Choose print output options such as range of pages, number of copies, odd or even pages, print quality and any other applicable printer options
- Insert and manipulate objects in an application including clip art, charts and organisation charts
- Use templates and wizards
- Use the drawing tools
- Import / Export data

<table>
<tr><td colspan="5">General skills – all applications</td></tr>
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<td>Document
Open new document
Open existing document
Close
Save
Save as
Print
Send
Convert
Publish
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Cut
Copy
Paste
Find
Replace
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Page Setup
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Colour
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Effects
Hyperlinks

Themes

Help files
Online help

Templates and wizards</td>
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Illustrations
Pictures
Clip Art
Word Art
Shapes
Charts
SmartArt (Diagrams)
Design
Borders and shading
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Headers and Footers
Page numbers
Pages (Breaks)
Symbols
Review
Proofing
Spelling and grammar
Comments
Track changes
Protecting document
Send to
E-mail
Internet fax</td>
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Specific word processing skills

- Use a word processing programme to an advanced level to manipulate text and graphics
- Input data using various input devices, methods and procedures
- Enter, edit and format text and graphics
- Create visual and printed matter
- Design and lay out documents
- Use and manipulate columns
- Apply and copy styles and formats
- Insert special characters or symbols
- Use automatic hyphenation
- Show non-printing characters
- Insert, remove and manipulate line breaks, page breaks and section breaks
- Indent paragraphs (left, right, first line, hanging)
- Apply spacing within and between lines and paragraphs
- Use tabs (left, centre, right, decimal, leader, bar)
- Use bullets and styles of bullets in a multilevel list
- Add borders and shading
- Create, manipulate and format a table with cells, rows and columns
- Use table properties
- Convert text to table and vice versa
- Perform a mail merge by creating a form letter and using an internal or external data source such as a spreadsheet or table

- Use track changes
- Insert reference
- Insert table of contents
- Insert auto text, fields, comments
- Create, use and manipulate forms
- Compare and merge documents

Specific spreadsheets skills:

- Process basic numerical data using a spreadsheet programme
- Insert, copy, delete and format rows and columns
- Work with cells and ranges
- Format cells and worksheets
- Use basic formulas
- Use basic functions
    - Mathematical functions such as sum, round, sqrt, power, sumif
    - Statistical functions such as average, min, max, count, large, small, mode, median, countif
    - Date and time functions such as date, day, now, today
    - Text functions such as left, right, mid, len, value, text
    - Logical functions such as If
- Create and edit charts
- Use relative and absolute cell reference
- Insert, delete and change the format of rows, columns and cells
- Select adjacent and non-adjacent ranges
- Sort
- Insert, copy, delete and rename worksheets
- Work with and between worksheets
- Use the auto fill tool
- Use the basic mathematical operators (addition, subtraction, multiplication, division) in formulas
- Interpret standard error values associated with using formulas
- Format and round of numbers
- Format date and text data
- Split and merge cells
- Manipulate text with wrapping and cell content orientation
- Add borders, colours and other effects to a cell range
- Create different types of charts and graphs (column chart, bar chart, line)
- Change colours, labels, legends, titles and axes in a graph
- Display gridlines, row and column headings and title rows for printing purposes

Specific database skills:

- Create single table data sources to generate forms, queries and reports using a database programme
- Create a single table data source
- Understand database organisation including records, tables, fields, data types, indexes and primary keys
- Manipulate tables, records and fields
- Work with field properties including default values, validation rules, input mask
- Construct databases and basic table relationships
- Filter, group and sort records
- Create and design forms, queries and reports
- Specify criteria in a query using the relational operators

- Add extra fields with calculations in forms, queries and reports

Word	Excel	Access

• Paragraph
  o Bullets and numbering
  o Indentation
  o Alignment
  o Line spacing
  o Paragraph spacing
  o Shading
• Styles
• Text
  o Change case
  o Text Box
  o WordArt
  o Drop Cap
  o Signature
  o Objects
  o Date and Time
• Links
  o Hyperlink
  o Bookmark
  o Cross-reference
• Tables
  o Table styles
  o Cells, Rows and columns
  ▪ Insert
  ▪ Delete
  ▪ Size
  o Merge and split
  o Alignment
  o Text direction
  o Properties
  o Gridlines
  o Convert to text
  o Formula
  o Sort
• Columns
• Section breaks
• Line numbers
• Hyphenation
• Background
• Page borders
References
• Table of contents
• Footnotes
• Citations and Bibliography
• Captions
Mailings
• Mail merge
• Envelopes and labels
• Fields
	• Cells
	  o Data type
	  o Alignment
	  o Wrap text
	  o Text direction
	  o Merge
	  o Split
	  o Auto fill
	• Cells, Rows and columns
	  o Size (width and height)
	  o Insert
	  o Delete
	  o Hide, Unhide
	  o Boarders
	  o Styles
	• Sheets
	  o Insert
	  o Delete
	  o Gridlines
	  o Rename
	  o Move
	  o Copy
	  o Headings
	  o Protect
	Conditional formatting
	Functions and formulas
	  o Date and time
	  Date, day, now, today
	  o Maths
	  Sum, round, roundup, rounddown, sqrt, power, rand, sumif
	  o Statistical
	  Average, min, max, count, counta, countblank, large, small, mode, median, countif,
	  o Text
	  Left, right, mid, len, value, text, find
	  o Logical
	  If
	  o Lookup and reference
	  Vlookup
	Get external data
	Sort
	Filter
	Print area
	Freeze Panes
	Relative and absolute cell reference
	Work between sheets
	Charts
	• Create
	• Edit
	• Format
	Linking formulas between sheets
		Datatypes
		• Text
		• Number
		• Date and Time
		• Currency
		• Autonumber
		• Yes/No
		• Memo
		• Ole object
		• Hyperlink
		• Lookup
		Objects
		• Tables
		• Queries
		• Forms
		• Reports
		Data validation
		Import, Export data
		Fields
		• Names
		• Properties
		  o Size / length
		  o Input mask
		  o Default value
		  o Validation rule
		  o Validation text
		  o Required
		  o Text alignment
		  o Decimal places
		Records
		Formatting fields, records, tables, forms, queries, reports
		Sort
		Filter
		Reports – grouped
		Group and report headers and footers
		Calculations in groups
		Fields with calculations in queries and reports
		Functions
		• Sum, avg, count, max, min

End-user computer application programme of own choice:

- Presentations or web authoring tools
- Enter, edit and format text, numbers and graphics
- Application of good design principles

Integration

- Integration of end-user computer application programmes
- Work between spreadsheet, database, word processor and fourth package

Communication modes and tools

- ***Email***
  - Create, open, delete, send, forward, reply, flag
  - Open attachments
  - Save attachments
  - Attach documents to mail
  - Send carbon copies
  - Sort
  - Set up and use an address book
  - Message rules
- ***Internet:***
  - Find a web site by using an URL
  - Follow hyperlinks
  - Use search engine to find information
  - Keywords
  - Evaluation of web sites
  - Download files
  - Save information to a disk

Annexure A provides content to support the attainment of the Assessment Standards. The content indicated needs to be dealt with in such a way that the learner can achieve the Learning Outcomes. Content should be embedded in situations that are meaningful to the learner and so assist learning and teaching. Content, when aligned to the attainment of the Assessment Standards, provide a framework for the development of Learning Programmes.

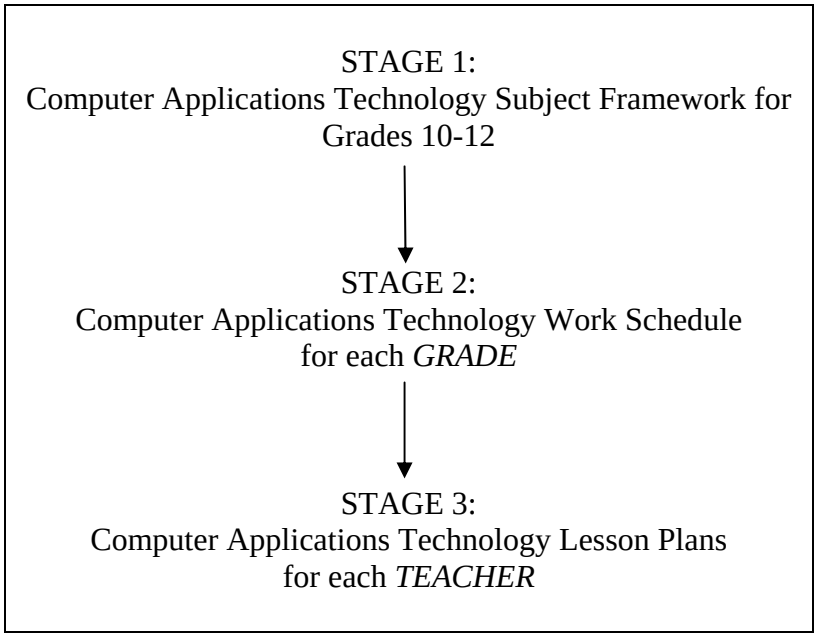
SECTION 3

DESIGNING A LEARNING PROGRAMME FOR COMPUTER APPLICATIONS TECHNOLOGY

3.1 INTRODUCTION

A Learning Programme is a tool to plan for sequenced learning, teaching and assessment across Grades 10-12 so that all three Learning Outcomes in Computer Applications Technology are achieved in a progressive manner. It is recommended that the Computer Applications Technology teachers at a school first put together a broad subject outline (i.e. Subject Framework) for Grades 10-12 to arrive at an understanding of the progression which needs to take place across the grades (see Section 3.3.1). This will assist with the demarcation of content for each grade. Thereafter, Computer Applications Technology teachers teaching the same grade need to work together and draw from the content and context identified for their grade in the Subject Framework, to develop a Work Schedule in which they indicate the sequence in which the content and context will be presented for Computer Applications Technology in that particular grade (see Section 3.3.2). Finally, the individual Computer Applications Technology teacher should design Lesson Plans using the grade-specific Work Schedule as the starting point. The Lesson Plans should include learning, teaching and assessment activities (see Section 3.3.3).

An outline of the process involved in the design of a Learning Programme for Computer Applications Technology is provided in the diagram below:



The process to be followed in the development of a Learning Programme is not a neatly packaged sequence of numbered steps that follow one another in a particular order. Teachers may find themselves moving back and forth in the process as they plan and critically reflect on decisions taken before moving on to the next decision in the process. The process is therefore not strictly linear and is reflective in nature. For this reason the steps provided in this Section are a guide and should be used as a checklist in the planning process.

3.2 ISSUES TO ADDRESS WHEN DESIGNING A LEARNING PROGRAMME

The issues to be addressed in the development of a Computer Applications Technology Learning Programme are presented in a tabular format to indicate the implications of each issue at each of the three stages of the development of a Learning Programme:

- Stage 1 – Subject Framework
- Stage 2 – Work Schedule
- Stage 3 – Lesson Plan

3.2.1 Policies and Principles

STAGE 1 Subject Framework **STAGE 2 Work Schedule** **STAGE 3 Lesson Plan**	The various Policies that impact on curriculum implementation should be considered throughout the planning process. *NCS*: • Principles: Refer to Section 2.3 to see how Computer Applications Technology supports the application of the nine principles of the NCS • Critical and Developmental Outcomes: Refer to Section 2.5 to see how Computer Applications Technology supports the application of the Critical and Developmental Outcomes *Other Policies and Legislation*: • White Paper 6, Language in Education Policy, Religion and Education Policy, HIV/AIDS Policy– all have implications for LTSM and teaching methods in Computer Applications Technology • White Paper 7 – gives an indication on the use of computers in the classroom and therefore has implications for LTSM and teaching methods in Computer Applications Technology

3.2.2 Content

In the NCS Grades 10-12 content means the combination of knowledge, skills and values.

STAGE 1 Subject Framework	The content is provided by the ASs. These give an indication of the knowledge, skills and values (KSVs) to be covered in each of the three grades. The Subject Framework sets out the content for the three years (i.e. Grades 10, 11 and 12).
STAGE 2 Work Schedule	The Work Schedule sets out the content for one year. Here the focus falls on the grade-specific KSVs required by the NCS.
STAGE 3 Lesson Plan	The Lesson Plans set out the content to be covered in each coherent series of learning, teaching and assessment activities. Each Lesson Plan can be one or more weeks in duration.

Refer to Annexure A for the Content Framework.

3.2.3 Integration

Integration involves the grouping of Assessment Standards according to natural and authentic links.

STAGE 1 Subject Framework	Integration within the subject should be considered in broad terms during discussions at this stage. All Grade 10-12 teachers should consider integration of ASs within and across the grades.
STAGE 2 Work Schedule	The integration and sequencing of the ASs is undertaken in the Work Schedule to ensure that all ASs for a particular grade are covered in the 40-week contact period.
STAGE 3 Lesson Plan	The same groupings of LOs and ASs as arrived at in the Work Schedule should be used to develop a coherent series of learning, teaching and assessment activities for each Lesson Plan.

3.2.4 Conceptual Progression

STAGE 1 Subject Framework	The Subject Framework should indicate the increasing depth of difficulty across Grades 10-12. Progression across the three grades is shown in the ASs per Learning Outcome.
STAGE 2 Work Schedule	Progression in a grade is evident in the increasing depth of difficulty in that particular grade. Grade-specific progression is achieved by appropriately sequencing the groupings of integrated LOs and AS in the Work Schedule.
STAGE 3 Lesson Plan	In the individual Computer Applications Technology classroom increasing depth of difficulty is shown in the activities and Lesson Plans. Progression is achieved by appropriately sequencing the activities contained within each Lesson Plan and in the series of Lesson Plans.

3.2.5 Time Allocation and Weightings

STAGE 1 Subject Framework	4 hours per week is allocated to Computer Applications Technology in the NCS. This is approximately 160 hours per year. The teachers of the subject should plan how this time will be used for the teaching of Computer Applications Technology in the three grades.
STAGE 2 Work Schedule	The groupings of ASs as arrived at in the integration process should be paced across the 40 weeks of the school year to ensure coverage of the curriculum.
STAGE 3 Lesson Plan	The amount of time to be spent on activities should be indicated in the Lesson Plans.

The concepts and skills of Computer Applications Technologies are inter-related and so skills, knowledge and values must be presented and taught in an integrated and authentic manner. For example, when acquiring the skills related to application software the emphasis should not be on the skills alone but should also focus on the knowledge and understanding underlying the skills and on the integration of skills and concepts to solve problems in a variety of contexts.

Furthermore, Learning Outcome 3 is specifically directed towards applying information management processes, knowledge and skills using end-user computer applications. Therefore, the skills and knowledge acquired during the course are not seen as isolated, discrete groupings. Teachers must keep this in mind when interpreting any suggested time allocation schemes.

Although information management is listed as a separate item, this theme should also be integrated across the various application software packages presented and in the teaching of operational knowledge. Therefore, there should be integration of assessment standards within one learning outcome as well as across the three learning outcomes.

Although all three Learning Outcomes carry the same educational weighting, the time allocated to the various Learning Outcomes, may differ. In other words, the time allocation should not be used as a measure of importance for the Learning Outcomes. Nonetheless, should excessive time be allocated to any particular Learning Outcome or Assessment Standard, learners will have less or inadequate time to achieve or attain the other Learning Outcomes or Assessment Standards.

3.2.6 LTSM (Resources)

LTSM refers to any materials that facilitate learning and teaching. LTSM need to be chosen judiciously because they have cost implications for the school and the learner. The NCS provides scope for the use of a variety of resources. All teachers and learners must have a textbook. However, teachers are required to go beyond the textbook. They do not necessarily need exotic, specialised materials. Rather common and readily available items can be used.

STAGE 1 Subject Framework	Compile a list of general LTSM (textbooks and other resources) that will be necessary and useful in the teaching, learning and assessment of the content. This assists with the requisition and availability of LTSM at a school.
STAGE 2 Work Schedule	List grade-specific LTSM (resources) required in the learning, teaching and assessment process for the grade.
STAGE 3 Lesson Plan	Identify specific resources related to the individual activities contained within a Lesson Plan.

3.2.7 Assessment

In order to administer effective assessment one must have a clearly defined purpose. It is important that all the tasks are well covered as spelt out in the Subject Assessment Guideline document. By answering the following questions the teacher can decide what assessment activity is most appropriate:

- What concept, skill or knowledge needs to be assessed?
- What should the learners know or be able to do?
- At what level should the learners be performing?
- What type of knowledge is being assessed: reasoning, memory or process?

The Subject Assessment Guidelines for Computer Applications Technology provide teachers with an example of a formal Programme of Assessment. The Programme of Assessment for Computer Applications Technology consists of seven tasks which are all internally assessed.

Computer Applications Technology also includes a Practical Assessment Task (PAT). This is a project and should be administered through the first three terms according to set due dates for completion of each stage of the project.

Assessment of Learning Outcomes in Computer Applications Technology:

Learning Outcome 1
Assessment should concentrate on the software, hardware, network and communication technologies that an end-user would typically encounter. The learner should understand the basic concepts of these technologies to make informed decisions in a real-life end-user scenario, ranging from choices of technology to its responsible use.

Learning Outcome 2
Assessment of this Learning Outcome concentrates on application and communication software so that learners can solve problems by using a variety of application packages effectively and efficiently.

Learning Outcome 3
Assessment in Learning Outcome 3 should focus on the learner's ability to recognise information needs, find, access, use (analyse, process, manipulate, organise) synthesise, create, communicate and present information using end-user application skills to function in an information-driven society.

STAGE 1 Subject Framework	Develop a three-year assessment plan using the Subject Assessment Guidelines for Computer Applications Technology. This should ensure the use of a variety of assessment forms relevant to the subject and progression across the three grades.
STAGE 2 Work Schedule	Use the Subject Assessment Guidelines for Computer Applications Technology to develop a grade-specific assessment plan. The forms of assessment listed must facilitate the achievement of the particular LOs and ASs in each grouping.
STAGE 3 Lesson Plan	Indicate more classroom-specific assessment strategies, by mentioning the methods, forms and tools that will be used to assess learner performance in each activity. HINT: Not all activities need to be assessed – some may just be introductory in nature or for enrichment. The choice of an assessment strategy is determined by the LOs and ASs that have been grouped together for a particular Lesson Plan. The assessment strategy chosen must facilitate the achievement of these particular LOs and ASs in the classroom.

3.2.8 Inclusivity and Diversity

The following steps can be taken to effectively address diversity in the classroom when planning Computer Applications Technology teaching activities:

- consider individual past experiences, learning styles and preferences;
- develop questions and activities that are aimed at different levels of ability;
- provide opportunity for a variety of participation levels such as individual, pairs and small group activities;
- consider the value of individual methods ; and
- assess learners based on individual progress.

STAGE 1 Subject Framework	Teachers should be sensitive to inclusivity and diversity when identifying content, teaching styles and methods, forms of assessment and LTSM (Resources). Diversity should be accommodated in the following areas: • Learning styles: provide optional activities / different ways of doing same activity • Pace of learning: provide for both slower and faster learners by providing optional extra activities, reading or research, as well as multiple assessment opportunities • Differences in levels of achievement: provide optional extra activities, challenges and materials that cater for these differences between learners. • Gender diversity: ensure that teachers do not inadvertently allow or contribute towards discrimination against boys or girls in the classroom on the basis of gender. • Cultural diversity: recognise, celebrate and be sensitive when choosing content, assessment tasks and LTSM.
STAGE 2 Work Schedule	
STAGE 3 Lesson Plan	This is catered for as EXPANDED OPPORTUNITIES in the Lesson Plan. Enrichment is provided for high achievers and remediation or other relevant opportunities for learners requiring additional support. It is not necessary to develop an activity to cater for each type of diversity which arises in the classroom. Teachers may find it possible to cater for different diversities within one activity with effective planning.

3.2.9 Learning and Teaching Methodology

STAGE 1 Subject Framework	It is not necessary to record Teaching Methods for either of these stages.
STAGE 2 Work Schedule	
STAGE 3 Lesson Plan	This is catered for as TEACHING METHOD in the Lesson Plan. It provides an indication of how teaching and learning will take place, that is, how each activity will be presented in the classroom.

3.3 DESIGNING A LEARNING PROGRAMME

A detailed description of the process involved in the design of a Learning Programme for Computer Applications Technology is provided in this section (see Sections 3.3.1 – 3.3.3). The process presented here is a suggestion of how to go about designing a Learning Programme.

3.3.1 Subject Framework (Grades 10-12) for Computer Applications Technology

Planning for the teaching of Computer Applications Technology in Grades 10 to 12 should begin with a detailed examination of the scope of the subject as set out in the Computer Applications Technology Subject Statement. No particular format or template is recommended for this first phase of planning but the five steps below should be used as a checklist.

Although no prescribed document is required for this stage of planning, school-wide planning (timetables, ordering, teacher development, classroom allocation) as well as the development of grade-specific work schedules would benefit from short documents which spell out:

- The scope of the subject – the knowledge, skills and values; the content; the contexts or themes; electives etc. to be covered in the three grades
- A three-year assessment plan
- The list of LTSM required

❶ Clarify the Learning Outcomes and Assessment Standards.

The essential question for Computer Applications Technology is: What Learning Outcomes do learners have to master by the end of Grade 12 and what Assessment Standards should they achieve to show that they are on their way to mastering these outcomes?

All learning, teaching and assessment opportunities must be designed down from what learners should know, do and produce by the end of Grade 12. The Learning Outcomes and Assessment Standards that learners should master by the end of Grade 12 are specified in the Computer Applications Technology Subject Statement.

❷ Study the conceptual progression across the three grades.

Study the Assessment Standards for Computer Applications Technology across the three grades. Progression should be clearly evident across the grades.

❸ Identify the content to be taught.

Analyse the Assessment Standards to identify the skills, knowledge and values to be addressed in each grade. Also consider the content and context in which they will be taught.

❹ Identify three-year plan of assessment.

Use the Subject Assessment Guidelines to guide the three-year assessment plan. Consider what forms of assessment will be best suited to each of the Learning Outcomes and Assessment Standards and list these for the three grades. This ensures that assessment remains an integral part

of the learning and teaching process in Computer Applications Technology and that learners participate in a range of assessment activities.

❺ Identify possible LTSM (resources).

Consider which LTSM will be best suited to the learning, teaching and assessment of each Learning Outcome in the three grades using the Assessment Standards as guidance.

Refer to **Annexure A** for the content framework for Computer Applications Technology.

3.3.2 Designing Work Schedules for Computer Applications Technology

This is the second phase in the design of a Learning Programme. In this phase teachers develop Work Schedules for each grade. The Work Schedules are informed by the planning undertaken for the Subject Framework. The Work Schedules should be carefully prepared documents that reflect what teaching and assessment will take place in the 40 weeks of the school year. The following steps provide guidelines on how to approach the design of a Work Schedule per grade for Computer Applications Technology:

❶ Package the content.

Study the Learning Outcomes and Assessment Standards prescribed for the particular grade in Computer Applications Technology and group these according to natural and authentic links.

❷ Sequence the content.

Determine the order in which the groupings of Learning Outcomes and Assessment Standards will be presented in the particular grade in Computer Applications Technology. Besides the conceptual progression in the Assessment Standards for Computer Applications Technology, *context* can also be used to sequence the groupings in Computer Applications Technology.

❸ Pace the content.

Determine how much time in the school year will be spent on each grouping of Learning Outcomes and Assessment Standards in the particular grade.

❹ Review forms of assessment.

Revisit the forms of assessment listed for the particular grade in the Subject Assessment Guidelines, and refine them to address each grouping of Learning Outcomes and Assessment Standards as developed in Step 1.

❺ Review LTSM.

Revisit the LTSM (resources) listed for the particular grade in the Subject Framework, and refine them to address each grouping of Learning Outcomes and Assessment Standards as developed in Step 1.

Refer to **Annexure B** for examples of work schedules for Grades 10, 11 and 12 for Computer Applications Technology.

3.3.3 Designing Lesson Plans for Computer Applications Technology

Each grade-specific Work Schedule for Computer Applications Technology must be divided into units of deliverable learning experiences, i.e. Lesson Plans. A Lesson Plan adds to the level of detail in the Work Schedule. It also indicates other relevant issues to be considered when teaching and assessing Computer Applications Technology.

A Lesson Plan is not equivalent to a subject period in the school timetable. Its duration is dictated by how long it takes to complete the coherent series of activities contained in it.

The following steps provide guidelines on how to design Lesson Plans for Computer Applications Technology:

❶ Indicate the content, context, Learning Outcomes and Assessment Standards.

Copy this information from the Work Schedule for the particular grade.

❷ Develop activities and select teaching method.

Decide how to teach the Learning Outcomes and Assessment Standards indicated in Step 1 and develop the activity or activities that will facilitate the development of the skills, knowledge and values in the particular grouping. Thereafter, determine the most suitable teaching method(s) for the activities and provide a description of how the learners will engage in each activity.

❸ Consider diversity.

Explore the various options available within each activity that will allow expanded opportunities to those learners that require individual support. The support provided must ultimately guide learners to develop the skills, knowledge and values indicated in the grouping of Learning Outcomes and Assessment Standards.

❹ Review assessment and LTSM (resources).

Indicate the details of the assessment strategy and LTSM to be used in each activity.

❺ Allocate time.

Give an indication of how much time will be spent on each activity in the Lesson Plan.

3.3.4 Reflection and review of the Computer Applications Technology Learning Programme

After the Learning Programme has been delivered by means of Lesson Plans in the classroom, the teacher should **reflect** on what worked, how well it worked and what could be improved. Teachers need to note these while the experience is still fresh in their minds, so that if necessary, they can adapt and change the affected part of the Computer Applications Technology Learning Programme for future implementation. It is advisable to record this reflection on the Lesson Plan planning sheets.

ANNEXURE A: CONTENT FRAMEWORK FOR COMPUTER APPLICATIONS TECHNOLOGY

A Practical work

The description in the heading for each Grade refers to the scaffolding of content and is not referring to any taxonomy for assessment purposes. Bloom's taxonomy should still be applied within each grade

	Grade 10 **Knowledge and routine procedures**	**Grade 11** **Understanding and multi-step procedures**	**Grade 12** **Reasoning and reflecting and problem-solving**
Hardware:			
I/O devices **Storage devices and media**	Utilising basic I/O devices: o Keyboard o Mouse o Printer Knowledge of how to use I/O devices such as scanner, digital camera Basic use of traditional I/O devices: o Basic keyboarding techniques o Basic mousing techniques o Printing documents Saving and retrieving using storage devices such as hard disk, flash disks	More advanced techniques and application of I/O devices listed in Grade 10 More advanced techniques using storage devices e.g. burning CDs Importing / exporting data from various file formats e.g. text files Applying basic techniques to ensure accuracy and validity of data Basic troubleshooting	Verification and validation techniques – data input Use advanced techniques using devices listed in Grade 10 and 11 such as simple macros Importing / exporting data from various file formats, using appropriate techniques to enhance efficiency, productivity and accuracy Importing / exporting data using various I/O devices applying appropriate techniques to enhance efficiency, productivity and accuracy Transfer skills from familiar to unfamiliar contexts Troubleshooting Problem-solving
Data capture and output	Ports and connectors for connecting devices Device drivers Connecting basic I/O devices (plug in, load up) Install, Configure – default - basic steps using a wizard Basic management of basic I/O devices e.g. printer management New technologies	Connecting I/O devices (plug in, load up) Install, Configure – customising Management of I/O devices such as printer Basic troubleshooting New technologies	Troubleshooting input, output and storage devices Problem solving Explain advantages and limitations of devices New technologies
Software:			
Operating system **File Management**	Starting up Desktop: First looks Icons and shortcuts Introducing the desktop: o My documents o Recycle bin o Start button o Task bar, etc o My computer	Basic functions and procedures of utility software such as anti-virus and security software Convert text files by opening and saving them as different file types More advanced functions and multi-step procedures of aspects listed in grade 10 such as. More advanced file and folder properties More advanced housekeeping tasks e.g. uninstaller, backup / restore utility	Utilising features of an operating system: More advanced functions and procedures of utility software such as anti-virus and security software and operating system utilities including administrating security, establishing and internet connection, scheduling jobs, configuring devices Utility programs such as Scanning / defragging a disk, removing spyware, viruses, file compression, file conversion, CD /

	Grade 10 Knowledge and routine procedures	Grade 11 Understanding and multi-step procedures	Grade 12 Reasoning and reflecting and problem-solving
	o File manager e.g. Explorer o Accessories Typical features of the operating system (GUI)-basic File organisation – tree structure Folders, files, drives File types, size Control Panel Running and working between multiple programs concurrently Basic utilities, housekeeping, computer management Security – user name, log on, password Safety Utility software e.g. anti-virus Working with files and folders such as create, delete, move, copy, paste, rename Basic file properties Compress / decompress files and folders Carry out basic housekeeping tasks	Customising Basic troubleshooting	DVD burning Troubleshooting common housekeeping tasks Problem solving
Word processing	Basic knowledge underlying the skills and core concepts What it is it used for? First looks: o Toolbars, menus, etc o Workspace Looking at text Entering text Basic functions and routine procedures such as: File management: Open, saving, retrieving, printing, etc Basic formatting: character, font/text, page, bullets, borders, tabs, columns, paragraph Alignment and spacing – basic e.g. double, 1½ Basic editing including spell check, find and replace. Basic page setup and layout Insert page numbers, symbols and special characters	More advanced functions and multi-step procedures of aspects listed in grade 10 such as. Replace options, replace formatting, special characters, advanced tables, paste special etc. Customise e.g. bullets and numbering Advanced options and properties Customising templates Reviewing tools and proofing functions Using help files Basic troubleshooting Planning and designing own documents for specific scenarios	Advanced functions and procedures of aspects listed in Grade 10 and 11 Advanced editing and formatting e.g. styles, fields, sections, table of contents, forms with fields, mail merge, referencing, text flow e.g. pagination functions, comments, bookmarks, hyperlinks, autotext Design a document, using style sheets focusing on aspects such as page layout that includes advanced word processing techniques and techniques of integration with other software. Using online help Troubleshooting Problem solving Planning and designing word processing solution for scenarios – problem solving Pose and answer questions, interpret and adjust solutions Transfer skills from familiar to unfamiliar contexts

	Grade 10 Knowledge and routine procedures	Grade 11 Understanding and multi-step procedures	Grade 12 Reasoning and reflecting and problem-solving
	Basic tables Basic graphics such as Clipart, WordArt Basic drawing tools Use existing templates Basic integration techniques		
Spreadsheet	Basic knowledge underlying the skills and core concepts What it is it used for? First looks: o Rows, columns, cells, sheets, workbook Cell reference Cell ranges Data types such as General, Number, Currency, Date and Time Values and contents Formatting cells such as type, borders, shading, alignment, wrap, merge, alignment Formatting rows, columns and sheets Basic calculations using basic operators including +, -, x, ÷ Know and use basic functions such as: sum, average, count, min, max, today, mode, mean Round numbers using cell formatting Applying cell formatting Sorting Basic integration techniques	More advanced functions and multi-step procedures of aspects listed in grade 10 Calculations using operators including +, -, x, ÷ Using spreadsheet functions such as round, small, large, countif, sumif, simple if, power, rand Rounding of numbers Creating simple charts Absolute cell referencing Importing / Exporting data Using help files Basic troubleshooting Planning and designing own documents for specific scenarios Integration techniques within package e.g. linking cells between sheets	Using spreadsheet functions such as nested if, vlookup and variations of known functions, e.g. roundup, rounddown, counta, countblank Use spreadsheet text functions such as left, right. concatenate, len, value, find Identify appropriate functions to suit scenario and solve problem Use combination of functions and calculations Editing and changing chart Linking formulas between sheets Summarising data from given spreadsheet Validation of data Protection Troubleshooting Using online help Planning and designing spreadsheet solution for scenarios – problem solving Pose and answer questions, interpret and adjust solutions Transfer skills from familiar to unfamiliar contexts
Database		Basic knowledge underlying the skills and core concepts What it is it used for? First looks: o Objects: Table, Form, Query, Report o Tables: Records and Fields, Fieldnames Data types Basic field properties Database structure Creating table and form Entering data (records) Adding and deleting records, fields Basic formatting and editing	More advanced functions and multi-step procedures of aspects Basic calculations at end of report such as: sum, avg, count, min, max Importing / Exporting data Queries using more than one field Using help files Planning and designing database for specific scenarios Reports – grouped Group headers and footers Calculations in groups such as sum, avg, count, max, min

	Grade 10 Knowledge and routine procedures	Grade 11 Understanding and multi-step procedures	Grade 12 Reasoning and reflecting and problem-solving
		Sorting Page headers, footers (design view) Report headers, footers Basic data validation techniques Filters Basic queries Basic reports Different views e.g. design view, table view	Queries using and, or, not Adding fields with calculations in queries, reports Data validation Troubleshooting Using online help Planning and designing database solution for scenarios – problem solving Pose and answer questions, interpret and adjust solutions Transfer skills from familiar to unfamiliar contexts
Additional Package		Basic knowledge underlying the skills and core concepts First looks: o Toolbars, menus, functions o Work environment Structure of package Function of package – What it is used for? Routine procedures Core skills Basic operation Planning and designing a solution for specific scenarios	Multi-step procedures More advanced skills and techniques Integration within the package e.g. hyperlinks Using help files Planning and designing a solution for scenarios using additional package – problem solving Using online help Integration with other packages Pose and answer questions, interpret and adjust solutions Transfer skills from familiar to unfamiliar contexts
Integration	Basic integration – Word processing and spreadsheets	More advanced functions and multi-step procedures of aspects listed in grade 10 Integration techniques using all four packages. Planning and designing a solution for specific scenarios	Advanced techniques of integration within and between applications Active / live integration Import, export data from different formats e.g. text files to spreadsheet or database or vice versa Planning and designing a solution for scenarios using techniques of integration – problem solving Pose and answer questions, interpret and adjust solutions Transfer skills from familiar to unfamiliar contexts
Communication:			
Internet **e-mail**	Using the Internet and e-mail ISP vs. web-based e-mail First looks: Browser Search engines e-mail software	More advanced functions and multi-step procedures of aspects listed in grade 10 More advanced browsing and searching techniques More advance e-mailing e.g. message rules Register a web-based e-mail address Uses of computer communications	More advanced communication e.g. PIM, contacts, tasks, reminders, address book Troubleshooting Planning and designing communications solution for scenarios – problem solving New technology

	Grade 10 Knowledge and routine procedures	Grade 11 Understanding and multi-step procedures	Grade 12 Reasoning and reflecting and problem-solving
	Websites, web pages, hyperlinks, URLs Netiquette Facilities / Services Basic browsing and searching techniques Following hyperlinks Basic e-mailing e.g. compose messages, send and receive, forward, reply Attachments New technology	Planning and designing communication solution for specific scenarios. Basic troubleshooting New technology	
Documents (All applications)	Basic elements of different types of documents used for communication such as flyers, advertisements, forms, slide shows, web pages 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 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	Apply principles of design to enhance meaning and audience appeal Integrate a variety of visual and audio information into a document to create a message targeted for a specific audience Create documents by designing own templates Plan, design and create original documents for scenarios using a variety of techniques – problem solving

B Operational Knowledge – End-user context

The description in the heading row for each Grade refers to the scaffolding of content and is not referring to any taxonomy for assessment purposes. Bloom's taxonomy should still be applied within each grade for assessment purposes

	Grade 10 **Basic concepts and knowledge**	**Grade 11** **Understanding and application**	**Grade 12** **Reasoning, reflecting, problem solving**
Context: ICTs, End-user	Information and Communication Technology (ICT) – 2 parts: Computer Technology: Uses a computer which can accept data (raw facts and figures) and process or manipulate it into information we can use Communications Technology: consists of electromagnetic devices and systems for communicating over long distances. Communications Technology in the context of CAT uses a computer or some other information device, connected through a network to access information and services from another computer or information device.		
	As end-users, learners should be able to - make better buying decisions – be able to interpret advertisements and make judgements about quality and usefulness when buying equipment, software and Internet access - 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 most effectively - 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 – know how to be streetwise about these threats. - know about upgrading and how to integrate equipment with new products / technology – a knowledgeable user learns under what conditions to upgrade, how, and when to buy new equipment and make informed decisions		
Computers in all walks of life and types of computer systems	What is a computer? • Characteristics – Input, processing, output, storage and communication • Desktop / Laptop • Data and information 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, health, safety and security, travel New technology	ICTs used in everyday life • Types of computers and typical features o Dedicated devices such as ATMs and electronic appliances o Mobile devices such as PDAs o Client/Server Categorise computers • Portable (mobile) / Non-portable • Processing power • Usage Uses of computers and ICTs in familiar contexts Understand the role of ICTs in contexts such as home, communication, business, education, banking, health, safety and security, travel Particular technologies being used for specific purposes Advantages and disadvantages of using computers New technology and application	Interpret scenarios / case studies regarding the use of ICTs in different contexts (pervasive) Convergence Types of computer systems • Personal, SOHO, mobile • Data, information, knowledge Examples of computer usage Use of computers and ICTs in a variety of contexts New technology and application

	Grade 10 Basic concepts and knowledge	Grade 11 Understanding and application	Grade 12 Reasoning, reflecting, problem solving
Hardware:			
I/O devices	What is hardware? Identify hardware components Basic concepts and introduction to basic input and output devices and their use such as: o Keyboard o Pointing devices such as mouse, (including types), touchpad, trackball, pointing stick, light pen, touch screen, pen input, joystick o Scanning devices and OCR o Reading devices – OMR, bar code readers, MICR, magnetic stripe, RFID o Digital camera o Voice input / speech recognition, audio input o Video input such as web cams, video cameras o Biometric input o Terminals o Monitors o Printer o Modem / fax modem o Speakers and headsets o Data projector Taking care of I/O devices Identify ports and connectors Install and configure commonly used I/O devices – connecting using ports and connectors New technology	Categorise hardware according to input, output, storage, processing and communication devices List advantages / disadvantages / limitations of I/O devices How to use When to use What software / other equipment is required e.g. device drivers? Interpret adverts regarding I/O devices What / which to buy: devices such as printers – best options to fit purpose Basic troubleshooting Less common / New technology	Explain advantages and limitations of I/O devices Which devices will enhance accessibility / productivity such as voice recognition hardware and why / how? Recognise the potential for human error when using tool/technology Interpret adverts / scenarios / case studies regarding I/O devices Troubleshooting e.g. printing problems, configuring I/O devices, downloading photos from a digital camera or cellphone, list possible reasons why commonly used I/O devices would not function, etc. Making informed decisions regarding I/O device to be used for specific problem / scenario Pose and answer questions, interpret and adjust solutions Transfer skills from familiar to unfamiliar contexts New technology
Storage devices and storage media	What is storage? Identify storage devices and media Basic concepts and introduction to basic storage devices and media such as: o Hard disk (fixed & removable) o Flash drives o CDs & DVDs o Memory cards	List advantages / disadvantages / limitations Primary storage (memory) vs. secondary storage How to use When to use Interpret adverts Basic troubleshooting Less common / New technology	Explain advantages and limitations of storage devices and media Interpret adverts / scenarios / case studies regarding storage media Troubleshooting Making informed decisions: e.g. what to buy / use / when to use Pose and answer questions, interpret and adjust

	Grade 10 Basic concepts and knowledge	Grade 11 Understanding and application	Grade 12 Reasoning, reflecting, problem solving
	Capacity Basic functions / purpose Taking care of storage media New technology Use adverts within familiar context		solutions Transfer skills from familiar to unfamiliar contexts New technology
Processing	Basic concepts and introduction to the basic components of system unit: o Motherboard o CPU o Memory (RAM, ROM) What is it? Size / speed	Understand the role of basic components of the system unit o Motherboard – houses components o CPU – processing o RAM – holds data and instructions during processing / execution o ROM – stores start-up instructions Factors that influence performance such as RAM, processor speed – basic concepts / non-technical Interpret adverts	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 adverts / scenarios / case studies regarding CPU and RAM Troubleshooting problems e.g. related to RAM such as non-responding applications Pose and answer questions, interpret and adjust solutions Transfer skills from familiar to unfamiliar contexts
Software			
General concepts	What is software? Identify hardware components Basic concepts and introduction: System software vs. application software Stand alone vs. Integrated software Freeware, shareware Open source Versions, patches	Categorise software according to application software and system software Function / purpose / role of concepts in Grade 10 When / where to use Basic system requirements e.g. hard disk space, CPU, RAM	Making informed decisions regarding concepts in Grade 10 and 11 Software that enhances accessibility such as on-screen keyboard Software that enhances productivity, efficiency such as speed recognition, scanning Interpret adverts / scenarios / case studies
Application software	Definition / Description Types Examples Typical features	Function / purpose / role of different types Compatibility When / where to use Help files	Troubleshooting such as obtaining software improvements Explain and motivate the uses of common applications such as word processing, spreadsheet, database, presentation, e-mail, web browsers, PIMs, etc. Interpret adverts / scenarios / case studies Online help Making informed decisions

	Grade 10 Basic concepts and knowledge	Grade 11 Understanding and application	Grade 12 Reasoning, reflecting, problem solving
System software	Basic concepts and introduction: Definition / Description Examples Operating System – basic function / purpose, typical features GUI Drivers Utility programs for housekeeping, PC management Security / Privacy What is it?	Operating system utilities o Management of desktop o Management of files o General housekeeping tasks such as scheduling jobs, configuring devices, administrating security, updating Operating system utilities such as file manager, firewalls, uninstaller, disk scanner / defragmenter, backup / restore, archive Stand alone utility programs such as antivirus programs, spyware removers, internet filters Basic troubleshooting using utility software Drivers Function / purpose /role How / where /when to use	Troubleshooting with regard to concepts listed in Grade 10 and Grade 11 e.g. housekeeping tasks, non-responding applications, freeing up space on a full disk, obtaining a software improvement (patch) Interpret adverts / scenarios / case studies Security management o Control access to computers e.g. passwords o Firewalls Making informed decisions e.g. what housekeeping tasks to perform and when as well as the use of utilities such as making backups, defragging, use of uninstaller instead of deleting programs, etc.
Networks / communication			
Network environment	Basic concepts and introduction to networks: Aims and objectives Advantages such as facilitating communications, sharing hardware, software, data and information, transferring funds Disadvantages Personal area network (PAN) including obtaining Internet access: o Identify hardware and software needed for connecting to the Internet o ISP – What is it and why is it needed? E-mail: o What is it? o Uses Netiquette	Local area networks (LAN) What is it? Where is it used? Definition, purpose, role, uses Examples Function Basic components – concepts only o Computer o NIC o Switch o Communication medium Log in / log off Intranet Uses of computer communications New technology	Wide area networks (WAN) Definition, purpose, role, uses Internet as an example of a WAN – what is the Internet and World Wide Web? What is the Internet used for? Internet: o Dial-up, broadband and typical characteristics o Modem, types of connections e.g. telephone, ISDN, ADSL, wireless technologies o ISP, Internet services o Netiquette o Software associated with Internet Uses of computer communications such as Internet, e-mail, Web, Instant messaging, Web services, access points, GPS, PIM Communication such as instant messaging, VoIP, RSS feed, blogs, podcast Download / Upload Setting up an Internet connection Uses of computer communications Making informed decisions Interpreting adverts / scenarios / case studies

	Grade 10 Basic concepts and knowledge	Grade 11 Understanding and application	Grade 12 Reasoning, reflecting, problem solving
			New technology
File organisation	Basic concepts and introduction: Examples of files Drives, folders, files File names File properties such as types, size File manager Organise, copy, rename, delete, move, sort Create short cuts Hierarchical structure	More advanced file properties such as read only Files: Backup, compress, export, search Organising files: directories, subdirectories and paths Create a file management system for a specific scenario	File conversion, advanced search Troubleshooting e.g. checking amount of used or free space, read only files Interpret adverts / scenarios / case studies Making informed decisions
Legal, ethical, security issues	Basic concepts and introduction: Licensing Computer crime Unauthorised access Ethical use of computers, networks and recourses Copyright issues Courtesy and procedures when using computer technologies Work collaboratively to share limited resources Care of technology equipment Recognise and acknowledge the ownership of electronic material Appropriate communication etiquette Viruses and threats – basic concepts	Integrity and ownership of data and information Hardware failure Human error Security, Privacy – spyware, adware, spam Social engineering tricks such as phising Information accuracy Data protection Threats Computer misuse Acceptable use policies of schools, Internet and networked services Document sources obtained electronically e.g. web site addresses Respect privacy and products of others	Internet security issues such as spyware, adware, popups, identity theft, firewalls, keylogging, etc Safeguards against criminals, viruses and threats Interpret scenarios / case studies Making informed, responsible decisions regarding concepts listed in Grade 10 and 11
Environmental issues	Basic concepts and introduction: Recycling, power consumption E-waste Green computing Environmental issues related to the use of technology with emphasis on local issues	Recycling, power consumption E-waste Green computing Environmental issues related to the use of technology with emphasis on national issues	Interpret scenarios / case studies Making informed, responsible decisions regarding issues listed in Grade 10 and 11 Ways in which ICTs can assist in solving global environmental problems
Impact 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	Impact of ICTs in the workplace The role of technology in a variety of careers The impact on society of having access to information provided by ICTs	Describe, using examples, how ICTs such as telephones and the Internet create a global community Cultural impact of global communication How technology can benefit or harm society

	Grade 10 Basic concepts and knowledge	Grade 11 Understanding and application	Grade 12 Reasoning, reflecting, problem solving
	Impact on e.g. Home, Office, Education, Business and Commerce, Health care, Safety and security		Analyse and assess the impact of technology on the global community Use information sources from around the world Evaluate the driving forces behind various ICT inventions Social networking such as facebook Social engineering Wikis Interpret scenarios / case studies Making informed responsible decisions
Health and ergonomic issues	Posture Safe behaviour when using ICTs Risks to health Ergonomics to promote health and well-being	New physical environments with respect to ergonomics New technology	Interpret adverts / scenarios / case studies Making informed, responsible decisions New technology

C Information Management

	Grade 10	Grade 11	Grade 12
	Basic knowledge and routine procedures regarding the information management processes	**Multi-step procedures regarding the information management processes**	**Solve problems using information management processes** **Transfer skills from familiar to unfamiliar context** **Integrate various processes and applications** **Reasoning and reflecting**
Information Management:			
Task definition	Identify and define a problem within a defined context Formulate questions - closed as well as open-ended questions Use technology to help with problem-solving	Identify and define a problem in different contexts Formulate questions from different categories Select and use technology to assist in problem-solving	Identify and define a problem in a variety of contexts Pose critical questions from different categories Formulate new questions as research progresses and make revisions to the plan as necessary Identify and use the appropriate tools and technology to solve problem
Find information	Plan to complete an inquiry Methods of collecting data Consider information sources Electronic reference works Internet Search engines Follow a plan, including a schedule to use during inquiry process Use two sources Use criteria to evaluate sources Use data gathering tools such as simple surveys	Create a plan for an inquiry that includes consideration of time management Use appropriate information sources Develop and apply criteria to evaluate sources Use appropriate data gathering tools	Develop a plan to manage volumes of information using timelines, organizational charts and calendars Use a variety of information sources Construct meaningful data gathering tools
Access information	Access and retrieve specific information from electronic sources for a specific inquiry Electronic sources: searches using keywords Navigate within a document, CD or software program that contains links Evaluate information sources Access and retrieve appropriate information from the Internet by using a specific search path or from a given URL Access hyperlinked sites on an intranet or the Internet	Plan and conduct a search using a variety of electronic sources Refine searches to limit sources to manageable number Evaluate information sources	Plan and perform complex searches using more than one electronic source Select information from appropriate sources including primary and secondary sources Evaluate information sources

	Grade 10	Grade 11	Grade 12
Use information - Analyse - Process - Manipulate - Organise	Extract and record information from a source Evaluate information Summarise data by picking key words from gathered information Process / Manipulate information from a source to retell what has been discovered Copyright Plagiarism Organise information gathered by selecting and recording the data in logical file categories Use word processing and spreadsheets to organise, manipulate and process information and data Manipulate / Process information from two sources Reflect	Extract and record information from different sources Evaluate information Summarise data by picking key words from gathered information Process / Manipulate information from different sources using appropriate software to retell what has been discovered Copyright Plagiarism Organise information using appropriate tools such as word processor, database, spreadsheet or electronic webbing Reflect and describe	Extract and record information from a variety of sources Evaluate information Summarise data by picking key words from gathered information Process / Manipulate information from a variety of sources using appropriate software to retell what has been discovered Copyright Plagiarism Analyse information using appropriate software to create a product and/or solve a problem and/or make a recommendation and/or convey an idea/plan Reflect and describe
Synthesize and create **Communicate and present** **Reflect and evaluate**	Create a product such as a report to solve a problem and/or make a recommendation and/or convey an idea/plan Final check Present and communicate information in specific formats Present and communicate information using appropriate forms such as word processing documents, spreadsheets, reports, presentations	Present and communicate information in appropriate forms for specific purpose and audience Support communication with e.g. appropriate graphics, images, sounds, animation.	Use appropriate software to demonstrate personal understandings Evaluate the appropriateness of the tools and technologies used to investigate and solve the problem Create and navigate a multiple link document to present information

ANNEXURE B: EXAMPLES OF WORK SCHEDULES FOR COMPUTER APPLICATIONS TECHNOLOGY

Example of a Grade 10 Work Schedule

TIME FRAME	LOs & ASs	CONTENT and CONTEXT (See Subject/Content Framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
		Setting up a basic electronic office at home		
		Term 1		
1 week (= 4 hours)	10.1.1	• Concepts of hardware: o I/O devices, peripherals – examples such as Input: Keyboard, pointing devices, voice input, audio input, video input, scanning devices, card readers, biometric input Output: Monitor, printer, scanner, data projector, speakers and headsets o PC components: Motherboard, CPU, RAM, ROM • Concepts of software o System Software vs. application software o Examples	**Daily:** Activities Exercises Assignments	Textbook Computer parts
1 week	10.1.1 10.1.4 10.1.5	*Buying basic equipment to set up the office:* • Hardware o Motherboard, CPU, RAM, ROM • I/O devices o Monitor, keyboard, mouse o Health and ergonomic issues – impact on health • Connecting I/O devices o Appropriate ports / buses • Software: Essentials o Operating system o Word processing programme • Storage o Hard disk, flash memory, CD, DVD • Legal and ethical issues o Licensing of software	**Daily:** Activities Exercises Assignments	Textbook Advertisements Licence agreement
3 weeks	10.1.1 10.1.2 10.2.1 10.2.2	• Introducing the keyboard and mouse o Basic keyboarding and mousing techniques • Introducing the operating system o Basic features o Start up / shut down o Introducing the Desktop • Basic file organisation o My computer, file manager • Introducing a word processing programme o First looks: work environment o Open, save, retrieve o Start entering text	**Daily:** Activities Exercises Assignments	Textbook Keyboard Mouse Typing tutor PC with operating system Word processing programme
½ week	10.1.1 10.1.2 10.1.5	*Adding Extras – Adding a printer* • Printers – types • Buying a printer • Adding a printer – plug in o Appropriate cable and port / bus • Cartridges – e-waste, recycling	**Daily** Activities Exercises Assignments	Textbook Advertisement of printers Printer, cable, PC Printer driver

TIME FRAME	LOs & ASs	CONTENT and CONTEXT (See Subject/Content Framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
½ week	10.1.1 10.1.2	• Installing printer – load up o Device driver o Plug-n-Play o Printer management – basic	**Daily:** **PoA - Test:** I/O and storage devices	Printer Driver
2 weeks	10.2.1 10.2.2 10.2.7	• Data input – keyboarding • Word processing – routine procedures o Enter text o Correct input errors o Basic formatting – character / text, paragraph – routine procedures o Basic editing	**Daily:** Activities Exercises Assignments	Textbook Word processor
½ week	10.1.3	*Organising my hard disk* • Files – types and properties – basic • Folders o Hierarchical structure	**Daily:** Activities Exercises Assignments	Textbook
½ week	10.1.3 10.1.1	• Working with files and folders – create, delete, copy, rename, etc. • Create hierarchical file structure for a specific scenario	**Daily:** Activities Exercises Assignments	Textbook Operating system
2 weeks	10.2.1 10.2.2 10.2.7	• Word processing – routine procedures o Entering text o Basic formatting – page o Inserting graphics – basic o Basic editing	**Daily** **PoA – Practical Assignment:** Word processing and File management	Textbook Word processor
Term 2				
½ week	10.1.1 10.1.5 10.2.8	*Communicating with the outside world* • Communication modes and tools – basic o Connecting to the Internet: Hardware needed, software needed, service provider, communication channels – basic • Impact on society	**Daily:** Activities Exercises Assignments	Textbook Brochures / Advertisements
1 week	10.2.1 10.2.2 10.2.7	• Word processing – routine procedures o Entering text o Basic formatting – bullets and numbering, paragraph – routine procedures o Inserting headers and footers, etc – basic o Basic editing	**Daily:** Activities Exercises Assignments	Textbook Word processor
½ week	10.2.8 10.1.4	*Communicating with the outside world* • Connecting to the Internet • Introducing mailing software • Introducing browser software • Security and Safety – viruses, spam, etc.	**Daily:** Activities Exercises Assignments	PC connected to Internet Textbook
½ week	10.3.1	*Finding information* • Identify sources o Electronic sources – keywords for search, hyperlinks o Other • Evaluating sources – given criteria	**Daily:** Activities Exercises Assignments	Word help files Encarta Internet Textbook
½ week	10.2.8 10.3.1 10.3.2	*Finding information, access & use information* • Encarta – search and navigate, following hyperlinks – routine procedures • Internet – search and navigate – routine procedures • Evaluate websites using criteria	**Daily:** Activities Exercises Assignments	Encarta Internet Textbook

TIME FRAME	LOs & ASs	CONTENT and CONTEXT (See Subject/Content Framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
2 weeks	10.2.1 10.2.2 10.2.7	• Word processing – routine procedures o Enter text o Basic formatting – tabs, columns, boarders and shading, etc o Insert symbols, breaks, etc- basic • Basic editing	**Daily:** Activities Exercises Assignments	Textbook Word processor
½ week	10.1.4	*House rules for computer use* • Ethical considerations – general o Courtesy and procedures for using computers o Collaborative use and sharing resources • Ethical considerations – email and Internet • Legal issues o Integrity and ownership of data and information	**Daily** **PoA: Task** Hardware and software, legal, ethical, social, environmental issues	Textbook Electronic reference works Internet Other
½ week	10.3.2 10.3.3 10.1.4	*Information management* • Extract, use and present information • Copyright • Plagiarism	**Daily:** Activities Exercises Assignments	Information sources Textbook
2 weeks	10.2.1 10.2.2 10.2.7	• Word processing – routine procedures o Entering text / Input data o Basic formatting o Graphics o Basic editing • Documents o Basic elements o Reproducing documents – written instructions, visual interpretation o Creating documents using routine procedures	**Daily:** Activities Exercises Assignments	Textbook Word processor
2 weeks			**PoA - Exam**	SAG
		Term 3		
½ week	10.3.1	*Information management* • Task definition • Formulate questions	**Daily** Activities Assignments	Textbook
½ week	10.1.5	• Computers in all walks of life • Types of computer systems • Social impact	**Daily:** Activities Assignments	Textbook
2½ weeks	10.2.1 10.2.2 10.2.7	• Word processing – routine procedures o Enter text o Basic formatting – tables, paragraph, etc o Inserting symbols, breaks, etc – basic • Basic editing	**Daily:** **PoA: Assignment** Project-communication modes and tools	Textbook Word processor
½ week	10.2.1 10.2.3	• Spreadsheet o First looks: Workbook, sheets, rows, columns, cells o Data types, etc	**Daily:** Activities Exercises Assignments	Spreadsheet programme Textbook
2 weeks	10.2.1 10.2.3 10.2.7	• Spreadsheet – routine procedures o Entering text and numbers o Basic formatting – numbers, text, cells, rows, columns o Basic editing • Data types	**Daily:** Activities Exercises Assignments	Spreadsheet programme Textbook
½ week	LO 2 LO 3	*Start with PAT* Introduction to processes and phases	**PoA – PAT**	SAG

TIME FRAME	LOs & ASs	CONTENT and CONTEXT (See Subject/Content Framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
3 weeks	10.2.1 10.2.3 10.2.7	• Spreadsheet – routine procedures o Enter text and numbers o Basic formatting – numbers, text cells, rows, columns o Basic editing • Calculations o Functions and Formulae - basic • Data types	**Daily:** **PoA: Test** Spreadsheet Basic formatting, functions and formulae	Spreadsheet programme Textbook
1 week	10.1.1	*Adding to the personal office* • Peripherals – scanner • Hardware – Buying another computer • Networks o Connecting the two computers o Aims and objectives • Connecting devices / peripherals	**Daily:** Activities Exercises Assignments	Textbook Scanner
½ week	10.1.1 10.2.1 10.1.2	• Introducing the scanner o Basic scanning techniques • Connecting scanner – plug in / load up o Cable/port/bus, Driver	**Daily:** Activities Exercises Assignments	Textbook Scanner Driver
Term 4				
½ week	10.2.1 10.2.2 10.2.3 10.2.6 10.2.7	*Integration* Word processor & spreadsheet	**Daily:** Activities Exercises Assignments	Textbook Word processor Spreadsheet
2 weeks	LO 2	*Documents* • Word processing o Basic elements o Reproduce documents o Create documents, layout and design • Spreadsheet o Basic elements o Reproduce documents o Create documents, layout and design	**Daily:** Activities Exercises Assignments	Textbook Word processor Spreadsheet
1week	LO 2 LO 3	Finalise PAT	**PoA - PAT**	SAG
1 week	LO1	*Revision, consolidation and extension* Hardware, Software, Networks File management, legal, ethical, security, social, environmental issues	**Daily:** Activities Exercises Assignments	Textbook Worksheets Previous tests, exams
1½ weeks	10.2.8 LO 3	*Revision, consolidation and extension* Communication modes and tools Information management	**Daily:** Activities Exercises Assignments	Textbook Worksheets Previous tests, exams
2 weeks	ALL		**PoA - Exam**	SAG

Example of a Grade 11 Work Schedule

TIME FRAME	LOs & ASs	CONTENT & CONTEXT (See subject / content framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
		Gearing up a small business from a home office		
Term 1				
1 week (= 4 hours)	11.1.1 11.1.4 11.1.5	*Buying more equipment: PCs, I/O devices, peripherals* • Hardware o Motherboard, CPU, RAM, ROM • I/O devices o Monitor, keyboard, mouse, scanner, digital camera, current and new technology o Health and ergonomic issues – impact on health • Connecting I/O devices o Ports / buses / Plug-n-Play • Software o Operating system – proprietary vs. open-source o Utilities and Utility software o Additional application programmes • Storage o Hard disk, memory stick, CD, DVD, current and new technologies • Legal and ethical issues	**Daily:** Activities Exercises Assignments	Textbook Advertisements Licence agreement
1 week	11.1.1 11.1.2 11.1.3 11.2.1 11.2.2	• I/O devices o Keyboarding, mousing, scanning techniques – multi-step procedures • Operating system o Accessories o Utilities • File organisation o My computer, file manager	**Daily:** Activities Exercises Assignments	Textbook Keyboard Mouse Typing tutor PC with operating system Word processing programme
1½ weeks	11.2.1 11.2.2 11.2.7	Word processing – multi-step procedures (see subject / content framework)	**Daily:** Activities Exercises Assignments	Textbook Word processor
1½ weeks	11.2.1 11.2.3 11.2.7	Spreadsheets – multi-step procedures (See subject / content framework)	**Daily:** Activities Exercises Assignments	Textbook Spreadsheet programme
½ week	11.1.1 11.1.2 11.1.3	• Installing printer – load up o Device driver • Basic Troubleshooting	**Daily:** Activities Exercises Assignments	Textbook Printer Driver
½ week	11.2.4	• Database o First looks o Structure	**Daily:** Activities Exercises Assignments	Textbook Database software
2 weeks	11.2.1 11.2.2 11.2.7	• Database o Create structure o Enter records o Data types	**Daily:** Activities Exercises Assignments **PoA:** Practical test on database	Textbook Database programme

TIME FRAME	LOs & ASs	CONTENT & CONTEXT (See subject / content framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
1 week	11.1.1	*Adding to the office* • Networks o Connecting more than two computers – LAN o Sharing devices • Hardware and Connections • Software	**Daily** Activities Exercises Assignments	Textbook
½ week	11.1.3 11.1.2	*Organising my hard disk* • Files – types and properties, etc. • Folders o Hierarchical structure	**Daily:** Activities Exercises Assignments	Textbook
½ week	11.1.3 11.1.2	• Working with files and folders – create, delete, copy, rename, etc – multi-step procedures • Create hierarchical file structure for specific scenario	**Daily** **PoA:** Assignment – utility software and troubleshooting	Textbook
1 week	11.2.1 11.2.5 11.2.7	• Additional package (See subject / content framework)	**Daily** Activities Exercises Assignments	Textbook Word processor
		Term 2		
½ week	11.1.1 11.2.8	*Communicating with the outside world* • Communication modes and tools o E-mail o Internet o Other	**Daily:** Activities Exercises Assignments	Textbook Mailing software Browser Search engine
1 week	11.2.1 11.2.2 11.2.6 11.2.7	• Word processing – multi-step procedures (See subject / content framework)	**Daily:** Activities Exercises Assignments	Textbook Word processor
½ week	11.2.8 11.1.4	*Communicating with the outside world* • Internet • Mailing software • Browser software • Security – viruses and other threats	**Daily:** Activities Exercises Assignments	PC connected to Internet Textbook
½ week	11.3.1 11.3.2 11.3.3	*Information management* • Finding information, access and use information • Extract, use and present information	**Daily:** Activities Exercises Assignments	Textbook Electronic reference works Internet
½ week	11.2.8 11.3.1 11.2.2 11.2.3 11.2.4	*Information management* • Finding information, access and use information • Extract, use and present information	**Daily:** Activities Exercises Assignments	Encarta Internet Textbook
1½ weeks	11.2.1 11.2.3 11.2.6 11.2.7	• Spreadsheets – multi-step procedures (See subject / content framework)	**Daily** **PoA: Task – Practical** Application software, integration and file management	Textbook Word processor
2 weeks	11.2.1 11.2.4 11.2.7	• Database o Forms o Filters, Queries o Reports	**Daily:** Activities Exercises Assignments	Textbook Word processor

TIME FRAME	LOs & ASs	CONTENT & CONTEXT (See subject / content framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
1½ weeks	11.2.1 11.2.5 11.2.7	• Additional package (See subject / content framework)	**Daily:** Activities Exercises Assignments	Textbook Software
2 weeks			**PoA: Exam**	SAG
		Term 3		
½ week		*Start with PAT*	**PoA: PAT**	SAG
½ week	11.1.5 11.1.4	• Computers in all walks of life • Types of computer systems • Social and environmental impact • Legal & ethical issues	**Daily:** Activities Exercises Assignments	Textbook
2 weeks	11.2.1 11.2.5 11.2.6 11.2.7	• Additional Package (See subject / content framework)	**Daily:** **PoA: Task** Legal, ethical, social, environmental issues Additional package	Textbook
1 week	11.2.1 11.2.2 11.2.6 11.2.7	• Word processing – multi-step procedures (See subject / content framework)	**Daily:** Activities Exercises Assignments	Textbook Word processor
2 weeks	11.2.1 11.2.3 11.2.6 11.2.7	• Spreadsheet – multi-step procedures (See subject / content framework)	**Daily:** Activities Exercises Assignments	Spreadsheet programme Textbook
½ week	11.1.1	• Hardware: I/O devices o Introducing Digital camera and graphics	**Daily:** Activities Exercises Assignments **PoA: Test** Networks and relevant issues	Textbook Digital camera
½ week	11.1.1 11.1.2 11.1.3	• Introducing the digital camera o Basic techniques • Connecting camera – plug in / load up o Cable/port/bus, Driver	**Daily:** Activities Exercises Assignments	Digital camera Pictures from camera Driver
3 weeks	11.2.1 11.2.4 11.2.6 11.2.7	• Database (See subject / content framework)	**Daily:**	Spreadsheet programme Textbook
1 week	LO3 11.2.8	Information Management Communication modes & tools	**Daily:** Activities Exercises Assignments	Textbook
		Term 4		
1 week	11.1.2	*Utility software* • Use: Housekeeping / managing / maintenance • Basic troubleshooting	**Daily:** Activities Exercises Assignments	Textbook Utility software

TIME FRAME	LOs & ASs	CONTENT & CONTEXT (See subject / content framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
2 weeks	LO 2	*Integration and Documents* • Word processing • Spreadsheet • Database • Additional package	**Daily:** Activities Exercises Assignments	Textbook Word processor Spreadsheet
1 week	LO2 LO3	*Finalise PAT*	**PoA – PAT**	SAG
1 week	LO1	*Revision, consolidation and extension* Hardware, Software, Networks File management, legal, ethical, security, social, environmental issues	**Daily:** Activities Exercises Assignments	Textbook Worksheets Previous tests, exams
1 week	11.2.8 11.3.1 11.3.2 11.3.3	*Revision, consolidation and extension* Communication modes & tools Information management	**Daily:** Activities Exercises Assignments	Textbook Worksheets Previous tests, exams
2 weeks	ALL		**PoA: Exam**	SAG

Example of a Grade 12 Work Schedule

TIME FRAME	LOs & ASs	CONTENT & CONTEXT (See subject / content framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
		Workplace – corporate world		
		Term 1		
1 week (= 4 hours)	12.1.1 12.1.3	***Computer systems in the workplace*** • Hardware • Software • Networks o Internet o Intranet o WANs	**Daily:** Activities Exercises Assignments	Textbook Brochures Advertise-ments Licence agreement
2 weeks	12.1.1 12.1.2 12.1.3 12.2.1	• I/O devices o Procedures and techniques o Data input and validation • Operating system • File organisation • Utilities: Housekeeping / managing / maintenance	**Daily:** Activities Exercises Assignments	Textbook
1 week	12.2.1 12.2.2 12.2.6 12.2.7	*Word processing* (See subject framework) Problem-solving using advanced functions and techniques • Planning and designing word processing solution for scenarios	**Daily:** Activities Exercises Assignments	Textbook
1 week	12.1.1 12.1.2	*Additional* • Speech recognition o Software o Working • New technologies – things of current importance	**Daily:** Activities Exercises Assignments	Textbook Advertisement of New technologies
1 week	12.1.1 12.1.2 12.1.3	*Troubleshooting* o Software o Hardware	**Daily:** Activities Exercises Assignments	Textbook
1 week	12.2.1 12.2.3 12.2.6 12.2.7	*Spreadsheet* (See subject framework) Problem-solving Planning and designing spreadsheet solution for scenarios	**Daily:** Activities Exercises Assignments	Textbook
½ week	12.1.1 12.1.3 12.2.8	*Networks* • WAN • Internet o Connecting to the Internet: Hardware needed, software needed, choice of service provider, type of connection, etc o Setting up Internet connection • New technologies	**Daily:** Activates Exercises Assignments **PoA: - Test** Hardware, software and networks including troubleshooting	Textbook
½ week	12.1.3 12.1.2	*File organisation* • Troubleshooting • Compressing, converting • Planning and designing a file system solution for scenarios	**Daily:** Activities Exercises Assignments	Textbook

TIME FRAME	LOs & ASs	CONTENT & CONTEXT (See subject / content framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
1 week	12.2.1 12.2.4 12.2.6 12.2.7	*Database* (See subject framework) Problem-solving • Planning and designing database solution for scenarios	**Daily:** **PoA – Assignment** Input, format, edit data; various formats	Textbook
1 week	12.2.1 12.2.5 12.2.6 12.2.7	*Additional package* (See subject framework) • Planning and designing a solution for scenarios	**Daily:** Activities Exercises Assignments	Textbook
1 week	LO 2 LO 3	*Information Management* • Process – all stages • Planning and designing a solution for scenarios	**PoA – PAT** - START	Textbook SAG
		Term 2		
1 week	12.2.8	*Communicating with the outside world* • E-mail / PIM	**Daily:** Activities Exercises Assignments	Textbook
2 weeks	LO2	*Integration and Documents* • Word processing • Spreadsheet • Database • Additional package • Data input	**Daily:** Activities Exercises Assignments	Textbook
1 week	12.2.8 12.3.1	*Information Management* • Encarta – search and navigate, following hyperlinks • Internet – search and navigate • Planning and designing a solution for scenarios	**Daily:** **PoA: Assignment** Survey Additional package	Encarta Internet Textbook
2 weeks	12.2.8 12.1.4 12.1.5	*Communicating with the outside world* • Internet • E-mail / PIM • Other • Security – viruses, etc. • Impact on society	**Daily:** Activities Exercises Assignments	Textbook
1 week	12.1.5 12.1.4	*Impact of ICTs* • Society • Environment • Legal, ethical & security issues	**Daily:** Activities Exercises Assignments	Textbook Articles
3 weeks			**PoA - Exam**	SAG
		Term 3		
3 weeks	LO2	*Integration and Documents – Scenarios* • Word processing • Spreadsheet • Database • Additional package • Planning and designing a solution for scenarios	**Daily:** Activities Exercises Assignments	Textbook
1 week	LO1	*Operating system* • Housekeeping / maintenance • Troubleshooting • Problem solving	**Daily:** Activities Exercises Assignments	

TIME FRAME	LOs & ASs	CONTENT & CONTEXT (See subject / content framework)	ASSESSMENT (See Subject Assessment Guidelines)	RESOURCES
2 weeks	LO1	*Hardware, Software, Networks* *File management, legal, ethical, security, social, environmental issues* • Problem solving • Planning and designing a solution for scenarios	**Daily:** **PoA: Test** Communication modes and tools including legal, ethical, social issues and impact on society and environment	Textbook Worksheets
1 week	12.2.8 12.3.1 12.3.2 12.3.3	*Communication modes and tools* Information management • Problem solving • Planning and designing a solution for scenarios	**Daily:** Activities Exercises Assignments	Textbook Worksheets
1 week		*Finalise PAT*	**PoA – PAT**	SAG
3 weeks			**PoA – Exam**	SAG
Term 4				
2 weeks	LO 2	*Revision, consolidation and extension* • Word processing • Spreadsheets • Database • Additional package	**Daily:** Activities Exercises Assignments	Textbook Worksheets Old tests, exams
1 week	LO1	*Revision, consolidation and extension* Hardware, Software, Networks File management, legal, ethical, security, social, environmental	**Daily:** Activities Exercises Assignments	Textbook Worksheets Previous tests, exams
1 week	12.2.8 12.3.1 12.3.2 12.3.3	*Revision, consolidation and extension* Communication modes and tools Information management	**Daily:** Activities Exercises Assignments	Textbook Worksheets Previous tests, exams
4 weeks	ALL		**PoA - Exam**	SAG