

Computer Studies

Years 9-12

Samoa Secondary School Curriculum

Computer Studies. Years 9-12
Samoa Secondary School Curriculum

Curriculum Design and Materials Division
Ministry of Education, Sports and Culture

The 3rd edition of the curriculum statement was prepared and reviewed by the
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Introduction

The Computer Studies Curriculum was developed for students in Years 9 to 12 (ages 12-18) and the basic assumption is that these students have no prior knowledge of computers. However, the diverse level of computer skills of children at present in schools and the increasing need for students to have these skills in the long run must be taken into consideration.

Information technology in Samoa continues to develop. Most schools are equipped with resources, expertise and infrastructure to cater for the implementation of the revised computer curriculum. There is a growing awareness within the local community of the value of technology for improved communication and for improving efficiency and productivity.

The value of computer skills has been accentuated even further by the fact that most jobs in the workplace now require computer literacy especially in the use of the main computer applications: spreadsheets, word-processing and databases. Students possessing computer skills

can make valuable contributions to the community as they can use these skills for conducting research, for storage of valuable information and for more efficient communication.

The inclusion of Computer Programming in Foundation Computing prompts the reorganization of the prescription to introduce Computer Programming as a Core strand in the curriculum. This is to accommodate the staircasing from Secondary to Foundation level of students who might want to pursue further studies in Information Technology or Information Systems.

Computer Studies is a resource intensive subject area and for the implementation of a national curriculum to be successful the curriculum needs to go hand in hand with proper technology, planning and teacher training. Standards for hardware and software have been established by the MESc to support planning and maintenance of all the computing technology resources in schools.

Structure of the Computer Studies Curriculum

The Computer Studies curriculum statement is for Years 9 to Year 12. It has been designed for use by all secondary schools in Sāmoa who opt to include Computer Studies as a subject in their Year 9 to 12 courses. The curriculum caters for all students at these levels irrespective of gender, belief, ethnic, social and cultural background.

Due to the dynamic and changing nature of computer technology, this curriculum statement needs to be reviewed and evaluated periodically in order to reflect and suit ICT influences and trends. It is also assumed that this curriculum statement, since it is designed with the current situation in mind, will be implemented immediately.

The Curriculum Statement sets out the knowledge and skills students are expected to develop in years 9 to 12. This is in line with the structure of all other national Subject Curriculum Statements. The Year 9 to 12 Computer Studies Curriculum Statement is organised to show the:

- general aims of the subject curriculum;
- organising strands of the curriculum;
- sub-strands with major learning outcomes that organize the learning within the strands;
- key learning outcomes;
- specific learning outcomes at each year level.

Furthermore, as a guide to teaching coverage, where a specific learning outcome is achieved by a range of activities or com-

mands, ranges are assigned to denote the spectrum of activities required to achieve a specific learning outcome.

The current curriculum is structured such that core topics covered in Year 9 are again revisited in Year 10, reinforced in Year 11 and extended in Year 12. It is felt that this structuring best suits the current situation in Samoa and accommodates the following factors:

- Integration of technology is still progressing in Samoa and the emphasis is on promoting computer literacy and skills.
- Most students do not have computers at home and as a result, exposure and contact with computers is limited to time within the Computer Studies scheduled hours. Coverage of some of the key skills requires more exposure than at Year 9. They need to be reinforced in Year 10 and Year 11 and extended in the Year 12 curriculum.
- Flexibility in the curriculum at Year 9 to 12 is provided by the inclusion of optional strands to cater for the diverse skills and backgrounds of teachers and students alike.
- It is expected that as the baseline skills of students develop, the focus of the curriculum will be on the promotion of problem solving and critical thinking.

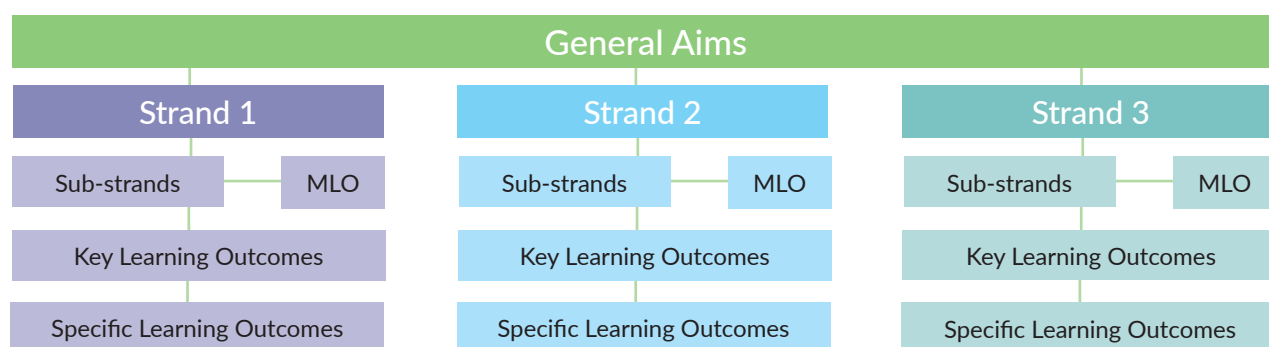


FIGURE 1
Structure of the Computer Studies Curriculum.

Key Principles

The National Curriculum Framework lists key five principles which underpin all aspects of the Samoan education system including the development of the curriculum. These are:

Equity

Equity requires that the system treats all individuals fairly and justly in the provision of educational opportunities. Policies and practices that advantage some social groups and disadvantage others will be avoided, while those which address existing inequalities in access, treatment and outcome will be promoted.

Quality

Educational quality is exemplified by high standards of academic achievement, cultural understanding and social behavior, and results from the complex interplay of professional and technical factors, and social cultural practices. Policies promoting these will focus on the learning institutions specifically on the day to day classroom practices including monitoring, assessment and reporting of students outcomes and teacher effectiveness.

Relevance

Relevance in education implies a system which is meaningful, recognized, applicable and useful to one's life. It should enhance individual and community well-being and ultimately national development, including cultural, humanistic and spiritual aspects. Policy decisions will address what is relevant to the individual learner, community and nation.

Efficiency

Efficiency in education is demonstrated by leadership and management practices which ensure optimum use of resources – human, financial and material – at all levels, efficient service delivery, effective communication and coordination and transparent decision making. Policies will reflect the need to be efficient and effective.

Sustainability

Sustainability requires the wise utilization of human, financial and material resources, to ensure

balanced and continual development in the system. Transparency and accountability are necessary at all levels. The collective values of trust, integrity and a sense of responsibility for the common good in local and national development will be promoted.

Curriculum Principles

The Computer Studies curriculum is based on the Curriculum Principles in the National Schools Curriculum Framework. The principles emphasise the notion that the individual student is at the centre of all teaching and learning, which lends itself to an outcomes-based curriculum, and that the curriculum will be of the highest quality. In planning and implementing their programmes, teachers must take the principles promoted in the National Schools Curriculum Framework into account. These are as follows.

All students can be successful learners.

The Curriculum recognises that all students can be successful learners when they are provided with sufficient time and support.

Students need to be engaged.

The Curriculum recognises that for students to succeed, teaching and learning experiences must relate to student interests, needs and learning styles in order to engage students in their learning.

Programmes must be planned.

The Curriculum recognises that for students to be successful, programmes must be carefully planned and use a range of teaching approaches in order to cater for the various learning styles of students.

Programmes must develop the whole person.

The Curriculum recognises that programmes must be broad, balanced and provide opportunities for the intellectual, social, spiritual and cultural dispositions of each student to be developed so when students complete their schooling they are well prepared for work and/or further studies.

Assessment must inform practice.

The Curriculum recognises the need for teachers to use monitoring, assessment and reporting practices that help them evaluate the effectiveness of their teaching practices as well as provide an indication of student achievement against established standards.

Teachers make a difference.

The Curriculum recognises the centrality of highly effective teaching in ensuring quality outcomes for students.

Community involvement assists learning.

The Curriculum recognises that the 'faasāmoa' must be upheld and that the community plays a large role in the education of students.

A sustainable future is key.

The Curriculum emphasises the need to develop environmentally and socially sustainable practices. This applies not only to the physical environment but also in the way society structures itself socially, culturally and economically.

The Curriculum will be responsive to change so that it is relevant to the needs of the individual student, to the well-being of the community and ultimately to national development.

The Computers Studies Curriculum

General Aims

The general aims of the Years 9 to 12 Computer Studies Curriculum Statement are listed below and reflect the concepts and skills this curriculum sets out to promote and achieve.

The proposed curriculum aims to:

- develop a good understanding of basic computer terminology, key
- concepts and competency in the use and operation of a computer;
- develop knowledge and proficiency in the major software types
- (both system and application software);
- develop an understanding of ethical, cultural and social issues
- related to computer technology;
- promote responsible use of computer technology;
- develop positive student attitudes towards computer use that
- support lifelong learning and productivity;
- develop knowledge and proficiency in using computer programs as

- a tool to aid learning, increase productivity and promote creativity;
- cultivate an appreciation and awareness of the usefulness of
- computers in optimising careers and everyday living;
- develop higher learning and critical thinking skills by the use of
- computer technology resources for problem solving and for making informed decisions;
- develop strategies for problem solving which can be transferred to real life situations.

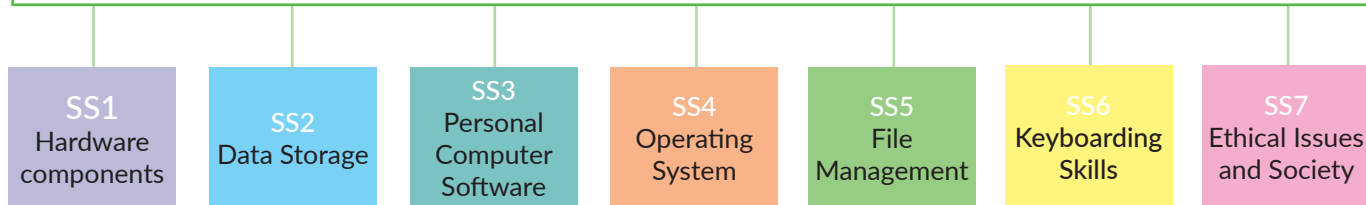
Hierarchy

The hierarchy of the Computer Studies Curriculum is shown in Figure 2.

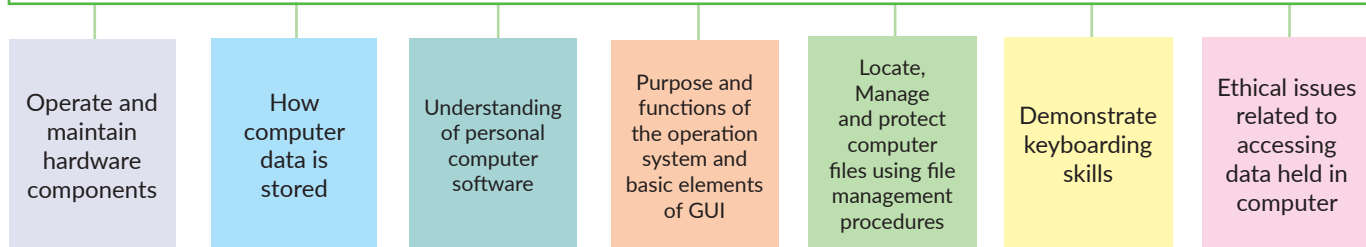
STRAND1: Personal Computer System and Management

Major Learning Outcomes
 Students are able to demonstrate skills and understanding of personal computer system and management by handling personal computers, managing computer files and protecting files.

7 Sub-strands (SS)



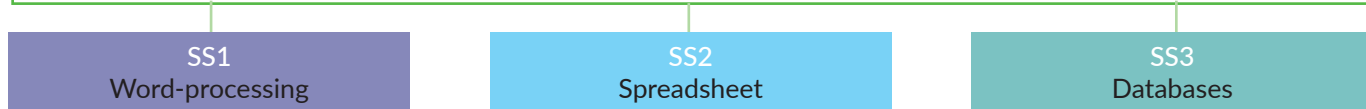
Key Learning Outcome



STRAND 2: Computer Applications

Major Learning Outcomes
 Students are able to demonstrate knowledge, skills and understanding of basic skills in using a word processor, spreadsheet and a single table databases.

3 Sub-strands (SS)



Key Learning Outcome

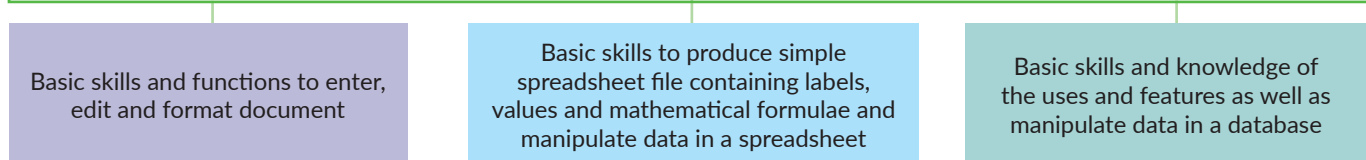


FIGURE 2
 Years 9-12: Curriculum Organisation by Strand, Sub-strands and Key Learning Outcomes.

STRAND 3: Fundamentals of Computer Programming

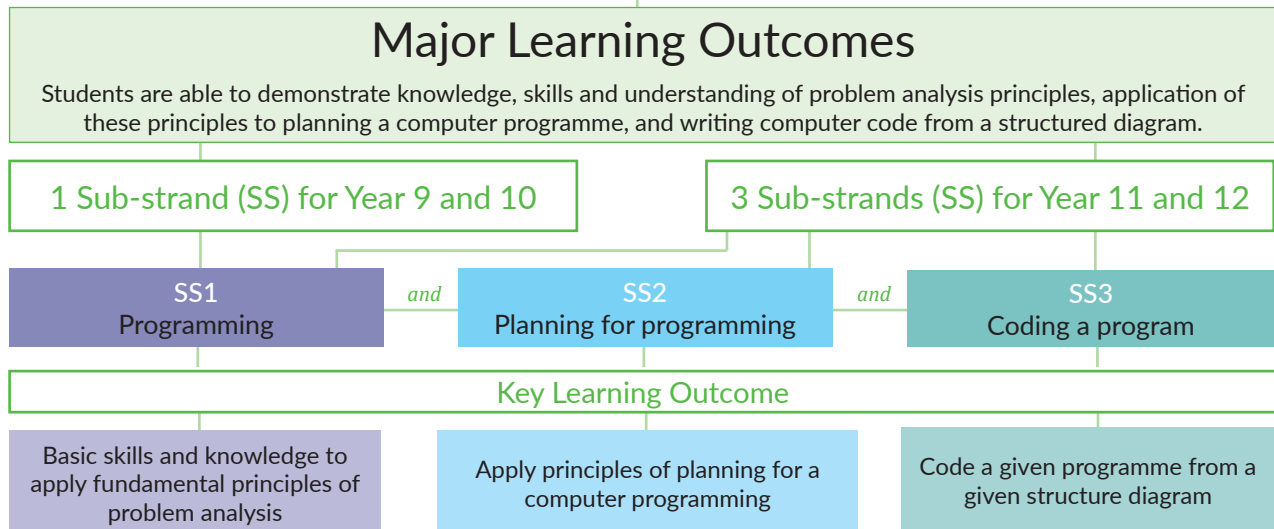


FIGURE 2

Y9 - Y12: Curriculum Organisation by Strand, Sub-strands and Key Learning Outcomes.

Strands

The Curriculum Statement is divided into three core strands and seven optional Strands.

Core Strands:

- Strand 1: Personal Computer and Management
- Strand 2: Using Personal Computer Applications
- Strand 3: Fundamentals of Computer Programming

Optional Strands:

- Strand 4: Computer Graphics and Desktop Publishing
- Strand 5: Visual Presentation
- Strand 6: Digital Images
- Strand 7: Internet
- Strand 8: Data Integration
- Strand 9: Website Design
- Strand 10: Introduction to Networking

Sub-strands and Major Learning Outcomes

Each strand has sub-strands and major learning outcome that develops each general aim of the Computer Studies Curriculum. The sub-strands

of each strand establish a clear and structured progression of key learning outcomes that span from Years 9 – 12. They provide an overview of the expected learning in each strand.

The key learning outcomes may also be woven together into learning situations that enable teachers to develop units of work which best meet and enrich the students' needs and experiences. This enables students to see connections between the different aspects of the subject.

Learning Outcomes

The key learning outcomes derived from each of the sub-strands and major learning outcomes outline the knowledge and essential skills which students will develop as they learn Computer Studies. Most key learning outcomes relate to a specific content area. The key learning outcomes also relate to the skills that are essential in improving and developing computer literacy skills and competence.

Strand 1: Personal Computer and Management

Sub-strands:

- i. Hardware Components
- ii. Data Storage
- iii. Operating System
- iv. Personal Computer Software
- v. File Management
- vi. Keyboarding
- vii. Ethical issues and Society

Strand 2: Using Personal Computer Applications

Sub-strands:

- i. Word Processing
- ii. Spreadsheet
- iii. Database

Strand 3: Fundamentals of Computer Programming

Sub-strands:

- i. Principles of Problem Analysis
- ii. Planning for Programming
- iii. Coding a Program

Strand 4: Computer Graphics and Desktop Publishing (optional)

Sub-strand:

- i. Creating Graphics and Producing desktop publishing documents

Strand 5: Visual Presentation (optional)

Sub-strand:

- i. Creating a presentation using any presentation software

Strand 6: Digital Images (optional)

Sub-strand:

- i. Processing images

Strand 7: Internet (optional)

Sub-strand:

- i. The uses of the internet

Strand 8: Data Integration (optional)

Sub-strand:

- i. How to integrate data

Strand 9: Website Design (optional)

Sub-strand:

- i. Fundamentals of World Wide Web

Strand 10: Introduction to networking (optional)

Sub-strand:

- i. Introduction to Computer Networking

Approaches to Teaching and Learning

The Years 9 to 12 Computer Studies curriculum is concerned with developing mastery of the common computer applications and consequently the predominant teaching approach is drill and practice.

However, a range of other approaches is used to ensure the promotion of active learning and the provision of a stimulating learning environment for the students.

The development of critical thinking and problem solving skills is fostered through the inclusion of programming, spreadsheets and databases and the use of inquiry based approaches. The use of a project-based approach to learning is incorporated in optional strands such as the Internet, Presentations, Computer Graphics and Desktop Publishing.

To promote effective learning, teachers are encouraged and expected to incorporate the following into their repertoire of teaching strategies.

- Students should be encouraged to discover knowledge for themselves and classroom exercises should be structured so that students can construct their own learning. These constructivist practices are to encourage students to be active learners and to be in control of their learning.
- Collaborative learning should be encouraged, where students can share ideas in discussions on class projects and problem solve in areas such as databases, programming and spreadsheets. Through collaboration, students can help each other with their learning, develop improved esteem and confidence and foster social interactions.
- Class exercises and activities such as projects should be structured to promote independent learning by students. Furthermore, they should promote critical thinking and reflection by students on what they have learnt.

Assessment and Evaluation

Assessment is the process of gathering meaningful information which is used to make judgments on aspects of the learning cycle such as learners' performance against the achievement objectives, and the quality and effectiveness of learning programmes. Assessment and evaluation of teaching and learning of Computer Studies must reflect the principles in the Samoa Secondary School Curriculum Overview Document.

The National Curriculum recognizes the relationship between the principles and purposes of the curriculum and methods of assessment. Assessment methods are an important factor in influencing and constraining teaching methods. The topics that are assessed are seen as important.

The Years 9 to 12 Curriculum Statement employs a range of teaching approaches and therefore the assessment and evaluation procedures need to reflect the nature of Computer Studies at these introductory levels. The way assessment is conducted emphasises the need to gain the skills that are assessed. Written examinations focus on the narrow range of knowledge and skills that can be assessed in written forms. Practical examinations focus on the interactive and hands on learning that can be assessed by practical forms.

It is important therefore that:

- a range of assessment procedures is used to provide useful information on students' progress against the key learning outcomes stated in the curriculum;
- skills and knowledge such as independent

inquiry and many practical skills need to be assessed. These are not easily assessed by examination and need to be assessed through school-based activities such as research projects and practical modules;

- assessment and evaluation are ongoing and help improve the ways in which Computer Studies programmes are meeting the students' needs;
- where appropriate, families and communities be involved as participants in the assessment and evaluation process;
- students get involved in assessing their own progress in learning Computer Studies.

Effective Assessment needs to:

- be valid, reliable and authentic;
- help students and teachers focus better on learning;
- involve students in worthwhile activities;
- be rewarding in terms of offering guidance about progress and skills;
- give feedback on how and why a student understands or
- misunderstands and what direction the student must take to improve.

Teachers evaluating their programmes or units can use information from assessment. Evaluation is used to measure the success or otherwise of programmes or units. Evaluation requires a

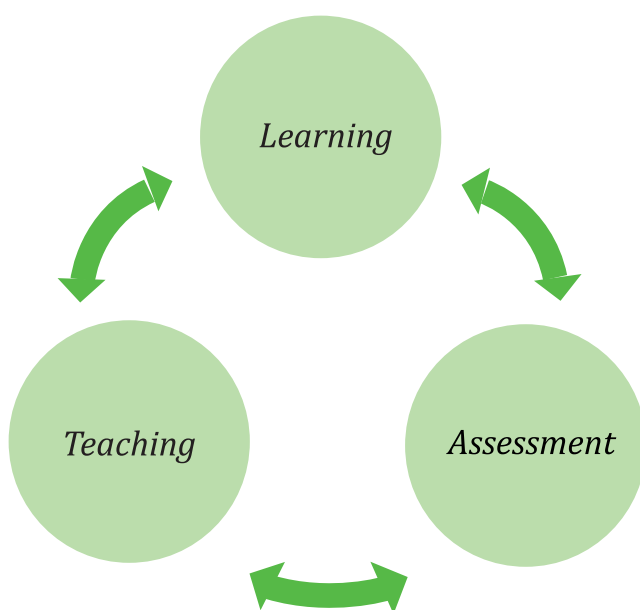


FIGURE 3

Learning-teaching-assessment cycle.

teacher to judge what worked well, how well the teaching improved students' learning and the things that need changing to improve the programme or unit for the future.

Teachers should involve colleagues and students in the process of evaluation. Students should be asked for their feedback on how well the teaching programme or unit met their learning needs.

There are three purposes of assessment:

1. Assessment for learning

2. Assessment as learning

3. Assessment of learning

Assessment for learning

Assessment of individual learners' progress is, above all, diagnostic and informative. The purpose of such assessment is to improve teaching and learning by diagnosing learning strengths and weaknesses before teaching and learning commences, and then measuring learners' progress against defined learning outcomes, and reviewing the effectiveness of teaching programmes. The information which teachers record from these assessments enables clear profiles of individual learners' achievement to be built. These profiles are used to inform teachers about each learner's learning and development, and to provide the basis for feedback to learners and parents.

Assessment for learning is based on a variety of student activities. These include: questioning of and by students; class exercises and activities involving individual and group work; products created by learners; projects and portfolios; teacher observations of learner performance; discussion; student self-assessment and peer assessment.

Activities such as these give teachers the opportunity to give verbal or written feedback to each student. The feedback is constructive and encouraging, and aims to build confidence. It is mainly descriptive, emphasising strengths and challenges. The information also gives teachers the opportunity to adjust their own teaching to ensure students' learning is proceeding satisfactorily. No grades or scores are given.

Assessment *as* learning

A learning outcomes approach to teaching and learning requires constant classroom assessment of learner progress for each clearly defined outcome, and constant feedback to learners and parents. Assessment should be positive and encouraging and help learners understand how to improve. Assessment is only meaningful when there is a clear sense of purpose and anticipated outcome – known to both the learner and the teacher.

Students have some ownership of, and take responsibility for, their learning because they know

in advance what is expected of them – what the learning goals are, and how achievement of the goals is going to be measured. Assessment tasks are explicitly linked to the curriculum and classroom programme.

Assessment *of* learning

Assessment of learning is summative. It takes place at the end of a learning unit and is usually accompanied by a grade or score. It tells the student, parents and the teacher how achievement compares with the expected outcome.

Essential Skills

These are the broad skills that are developed throughout the years of schooling. The essential skills are developed as a result of the quality of the experiences provided in all classroom and school activities. They are used by students in all school activities as well as in their social and cultural environments outside the school. Sāmoa's National Curriculum Policy Framework specifies seven essential skills.

Communicating effectively

Communication underpins all learning and includes reading, writing, speaking and listening, visual and graphic representation, non-verbal communication and the use of number and data to convey meaning.

In Computer Studies this means: students develop the skills to communicate beliefs, ideas, understanding, options, choices, consequences, decisions, and solutions in a range of contexts, using oral written and visual language skills.

Students are expected to:

- express their needs and feelings clearly and confidently;
- respond sensitively to the needs and feelings of others;
- listen, assert themselves, advocate, mediate and negotiate;
- demonstrate skills to discriminate, criticize and analyse, particularly in relation to the information provided by the media.

Solving problems

This involves the use of enquiry and reasoning, gathering data and processing information, posing creative solutions and evaluating outcomes. This is because of most of the tasks students work on will require them to take a concept and turn into a reality. In order to do this;

- identify, describe and re-define problems and analyse them from different perspectives;
- enquire, research and explore options and consequences;
- make informed choices and implement decisions;
- evaluate processes, decisions, actions and outcomes.

Creativity

Creativity goes hand in hand with problem solving and it is one of the other key skills a student studying computing will need. Since coming up with solutions to problems is almost never a straight forward process, thinking outside of the box is often required to ensure that delivering the most innovative and effective solution takes place.

Students in Computer Studies can exercise imagination, imitative and flexibility as they explore computer programmes.

Data Analysis

Basic data analysis skills are important for students taking computer studies.

Programming

This incorporates deep knowledge of algorithms and data structures, and coding skills in languages like Java, C++, Python, and JavaScript. Those hoping to improve their coding skills specifically should consider pursuing formal training.

Data Analysis

Basic data analysis skills are important for students taking computer studies as data plays a key role in many advanced computer studies practices

Data Visualization

As crucial as it is to be able to analyze data effectively, it's also essential that students can properly visualize data and results in a way others can understand. This includes translating raw data into graphs, charts, and other visual tools to help communicate findings.

Ethics

As technology continues to advance students in this in this field must develop an understanding of ethics and its impact on computer studies.

Managing one-self and developing work and study skills

Students need to learn how to manage their time effectively to allow them to pursue personal, spiritual, sporting and academic interests. They need to know how to resolve conflict in constructive ways that allow all involved to feel that they have been treated with fairness and respect. They need to take personal responsibility for their choices and actions and learn from both their mistakes and successes. This includes responsibility for their personal health and fitness.

Students are expected to develop skills to:

- self-appraise and self-advocate;
- set, evaluate, and achieve realistic personal goals;
- manage time effectively;
- show initiative, commitment, perseverance, courage and enterprise;

- adapt to new ideas, technologies and situations;
- develop constructive approaches to challenge and change, stress and conflict, competition success and failure;
- achieve self-discipline and take responsibility for their actions and decisions;

Integrating knowledge

While learning areas are used as the organisers of knowledge, the prime purpose of education is for students to understand the world around them and see the links between the various areas. This requires a deep and thorough understanding of subjects so the knowledge gained can be linked to experience and complex interrelated understandings they develop.

Students are expected to:

- develop self-esteem and personal integrity;
- take responsibility for their own health and safety, including the development of skills for protecting the body from harm and abuse;
- participate effectively as responsible citizens in a democratic society.

Using technology effectively

Technology involves the development of the skills and knowledge used to make and construct objects and products used on a daily basis and in the pursuit of special interests. It also involves the use of technology used to access information stored electronically. Over time, information technology will become more widely available and be increasingly used in all areas of the curriculum to create, locate and store information.

Students are expected to:

- collect, analyse process and interpret data and use appropriate technologies to present;
- develop sound, honest and reliable working habits;
- take responsibility for their own work.

Values in the Curriculum

Values are deeply held beliefs about what is important or desirable. They are expressed through the ways in which people think and act. Like the essential skills, they are central to the personal development of each individual and the way the broader society operates. Values are not only developed by schools but by the broader community including the media. The school curriculum will help individuals to develop and clarify their own beliefs and values. Every decision relating to curriculum and every interaction that takes place in a school reflects the values of the individuals involved and the collective values of the institution.

The values that underpin the Samoa curriculum include:

Fairness, in order to endure that: decisions and practices are viewed as having respected

the opinion of others and where outcomes are accepted as just.

Honesty, in order to ensure that: there is consistency and sincerity in what is said and done.

Excellence, in order to ensure that: high achievement is valued and celebrated.

Responsibility, in order to ensure that: students are responsible for their actions and undertake actions to assist others.

Respect, in order to ensure that: others are treated with consideration and sensitivity, the physical environment is maintained and cultural and spiritual values and societal rules are respected by all.

Tolerance, in order to ensure that: the differences and diversity within society are respected and accommodated.

Values in Computer Studies

Values are qualities that learners should develop as principles underlying conduct and decision making, while positive attitudes are personal dispositions needed to perform a task well. In Computer Studies opportunities for the development of positive values and attitudes are provided through learning tasks. Examples of positive values include self-esteem, perseverance, interdependence and tolerance. Learning Computer Studies provides opportunities for students to explore, challenge, think critically about and clarify their values and attitudes. Through personal learning experiences inside and outside the classroom, students have a variety of opportunities to acknowledge the values and attitudes of others. Schools must provide learners with the basis on which they can make informed and reasonable decisions in the following areas.

Honesty and integrity

Students should be sincere and honest in what is discussed or written in relation to information, issues, topics and genre presented.

Honour and respect

Students should be able to treat others with consideration and sensitivity, and respect another person's opinions and beliefs.

Wisdom, excellence and perseverance

Students should aim to achieve to the best of their ability, learn something worthwhile and useful, utilising all language skills to research topics and issues.

Responsibility

Students should be responsible for their own actions, be able to assist others, resolve disagreements and conflicts by peaceful negotiations and show care and concern for everyone they interact with. They should also be aware of their responsibility and obligation for the common good of humanity in various spheres of life.

Consideration and inclusion

In their learning, students should be concerned about themselves and others. They should be inclusive of, and cooperate with, everyone regardless of differences and abilities.

Gender Issues

The Samoa Secondary School Curriculum Overview Document requires education to be gender inclusive. Materials should use gender-neutral

language where possible. Hence teachers need to ensure that all teaching practices and activities support this principle.

Inclusive Education

The Ministry of Education, Sports and Culture is committed to providing high-quality education to all Samoa students within a school culture based on respect and acceptance. A key component of quality education is the provision of appropriate programmes for students with special needs or at risk because of social or economic circumstances. The principle that 'All students can be successful learners' recognises that all students can succeed when they are provided with sufficient time, support and effective teaching. This ensures that the aims of social justice and equity are seen in practice as all students irrespective of race, ethnicity, disability or socio-economic background can achieve quality educational outcomes.

It acknowledges the right of all students to be successfully enrolled in schools and experience success through participating in inclusive educational programmes.

Where possible, all student needs should be met in mainstream schools as these provide the rich social and cultural setting to best develop social and cultural skills necessary to fully operate in the broader community.

For all students the need to cater for their individual needs and develop appropriate skills,

knowledge and personal attributes through a holistic approach to learning is at the centre of all educational programmes. All students have the right to be included in their local school where they will have the opportunity to access the rich social and cultural setting to best develop the social and cultural skills necessary to be included in the broader community.

Supporting the process of inclusive education

Inclusive education is a process whereby the school systems, strategic plans and policies adapt and change to include teaching strategies for a wider, more diverse range of children and their families. Inclusive education means to identify a child's learning style and adapt the classroom and teaching strategies to ensure high-quality learning outcomes for all members of the class. Everyone is important, unique and valued for their contribution to the school.

Students who are gifted in one or more areas also have educational needs. For these students, it is important that programmes are provided that extend their abilities and assist them to develop their intellectual, artistic or other talents to their fullest potential.

Time Allocation

The Strands at each year level are minimal requirements for all students. From knowledge of their classes, individual teachers may wish to broaden the learning experiences at any year level for some or all of their students.

Consideration is also given to the approximate time in weeks that an average student might require in order to achieve the objectives, given the variety of backgrounds that the students may bring with them to Year 9.

Strands	Hours
Strand 1	12
Strand 2	12
Strand 3	10
Optional strand 1	3
Optional strand 2	3
Total teaching hours	40

Safety

Students taking computer studies often do not prioritise their safety while working with computers. Below are some of the safety measures for students to be aware of:

- do not touch any exposed wires or sockets;
- try not to type continuously for extremely long periods. Look away from the screen once in a while to give your eyes a rest.
- do not attempt to open any machines, and do not touch the backs of machines when they are switched on
- do not spill water or any other liquid on the machine, in order to maintain electrical safety. There is a lot of equipment in computer labs that could short circuit itself or cause electric shocks, so one needs to be very careful;
- log off the machine you were using, at the end of the period. Shut down computer at the end of the day. Push chairs up to the tables;
- try not to touch any of the circuit boards and power sockets when something is connected to them and switched on.



Computer Studies Overview of Strands and Learning Outcomes by Levels

Strands, Sub-strands, Major Learning, Key Learning Outcomes and Specific Learning Outcomes for Years 9 - 12

Core Strands

(Compulsory)

1. Personal Computer Systems and Management (Y9 – Y12)
2. Using Personal Computer Applications (Y9 – Y12)
3. Fundamentals of Computer Programming (Y9 – Y12)

Optional Strands

(Choose Two)

4. Computer Graphics and Desktop Publishing (Y9 – Y12)
5. Visual Presentations (Y9 – Y12)
6. Digital Images (Y9 – Y12)
7. The Internet (Y9 – Y12)
8. Data Integration (Y10 – Y12)
9. Website Design (Y12)
10. Introduction to Networking (Y12)

STRAND 1: PERSONAL COMPUTER SYSTEM AND MANAGEMENT

MAJOR LEARNING OUTCOME

Students are able to demonstrate skills and understanding of personal computer system and management by handling personal computers, managing computer files and protecting files.

Sub-strand 1: HARDWARE COMPONENTS

YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<p>The purpose and the uses of computer when they:</p> <ul style="list-style-type: none"> • Explain what a computer is; • Explain why we need computer studies <p>Range: Computer for school Computer for work</p> <ul style="list-style-type: none"> • Discuss what we can do using computer; • Describe the two types of computer <p>Range: Laptop Desktop</p> <ul style="list-style-type: none"> • Name and identify basic electronic hardware components of a computer; <p>Range: system unit mouse keyboard screen monitor/ visual display unit;</p>	<p>The purpose of hardware components when they:</p> <ul style="list-style-type: none"> • Give a simple definition of each component and describe the interactions between the components; <p>Range: system unit mouse keyboard screen monitor/ visual display unit);</p> <ul style="list-style-type: none"> • List other components that can be connected to a personal computer; <p>Range: printer speaker CPU digital camera webcam scanner flash drives;</p>	<p>Operate and maintain the hardware component when they:</p> <ul style="list-style-type: none"> • Name and describe a component of a personal computer; <p>Range: system unit input device (mouse, keyboard), output devices (visual display unit, speakers) Central Processing Unit (CPU) motherboard hard disk drives RAM ROM flash drives, CDs</p> <ul style="list-style-type: none"> • Describe the function of the components; • Explain how data flow among CPU, main memory and input/output devices; 	<p>Components inside the computer box when they:</p> <ul style="list-style-type: none"> • Define and describe the role of the components found inside desktop computer box; <p>Range: Motherboard Power supply Processor (CPU) Memory (RAM & ROM) Hard Disk drives Optical CD/DVD drives;</p> <ul style="list-style-type: none"> • Understand the function of expansion slots to enhance the PC's capabilities; <p>Range: Expanded memory Modems Sound cards Graphics Network card Video card;</p>

Sub-strand 1: HARDWARE COMPONENTS

YEAR 9	YEAR 10	YEAR 11	YEAR 12
<ul style="list-style-type: none"> Identify the optional features which can be connected to a computer; <p>Range: speakers scanners printers flash memory drives cameras (digital, video, web), USP; <ul style="list-style-type: none"> Define and describe the role of the basic components of a desktop computer; <p>Range: system unit monitor (VDU) keyboard mouse/pointer device; <ul style="list-style-type: none"> Identify different computer tasks; <p>Range: watch movies type documents send e-mails listen to music create a PowerPoint presentation create a website, etc.; <ul style="list-style-type: none"> Name and identify input, output, storage, communication device; Give examples of input, output, storage and communication devices; Explain the use of the mouse; <p>Range: right click left click double click scroll; <ul style="list-style-type: none"> Explain other electronic devices; <p>Range: cellphones, iPod, tablets, laptops, ipad; <ul style="list-style-type: none"> Differentiate cold start and warm start; Describe and maintain the environmental conditions required by a computer system; </p></p></p></p></p>	<ul style="list-style-type: none"> Identify different computer tasks; <p>Range: watch movies type documents send e-mails listen to music create a PowerPoint presentation create a website, etc.; <ul style="list-style-type: none"> Name and identify input, output, storage, communication device; Give examples of input, output, storage and communication devices; Explain the use of the mouse; <p>Range: right click left click double click scroll; <ul style="list-style-type: none"> Explain other electronic devices; <p>Range: cellphones, iPod, tablets, laptops, ipad; <ul style="list-style-type: none"> Differentiate cold start and warm start; Describe and maintain the environmental conditions required by a computer system; </p></p></p>	<ul style="list-style-type: none"> Describe the use of the keys on a QWERTY keyboard; <p>Range: Function keys (identify location) Control keys (Ctrl, Alt, Shift) Document keys (Home, End, Insert, Delete) Numeric keypad (Num Lock); <ul style="list-style-type: none"> Describe and maintain the environmental conditions required by a computer system; Identify simple hardware faults and suggest solutions; <p>Range: power loss loose or disconnected plugs; <ul style="list-style-type: none"> Discuss power supply problems in our country, the possible effects on personal computers and steps that can be taken to overcome the problems; <p>Range: power surge spikes brown out blackout UPS; </p></p></p>	<p>What connects to the computer when they:</p> <ul style="list-style-type: none"> Define and describe the role of the basic components that connect to a desktop computer box; <p>Range: keyboard pointing device/mouse monitor printer</p> <p>How the different components of a computer system work together when they:</p> <ul style="list-style-type: none"> Define and describe peripheral devices which can be connected to a computer; <p>Range: speakers scanners flash memory drives cameras (digital, video, web) Projector multifunction devices (printer/scanner/photocopier); <ul style="list-style-type: none"> Understand and describe; <p>Range: USB slots/ports HDMI (High Definition Multimedia Interface) VGA Fire Wire;</p> </p>

Sub-strand 2: DATA STORAGE

Students are able to demonstrate skills and understanding of:

YEAR 9	YEAR 10	YEAR 11	YEAR 12
<p>Storage concept when they:</p> <ul style="list-style-type: none"> • Define a data; • Explain different storage devices; <p>Range: flash memory drive hard disk drive CD, DVD external hard drive RAM, ROM.</p>	<p>Storage concept when they:</p> <ul style="list-style-type: none"> • Define Primary memory and Secondary memory; • Explain the differences between RAM and ROM; • Describe the technology employed with memory and disk storage, their advantages and disadvantages; • Describe memories RAM, ROM and disk storage, their purpose and the flow of information between them; • Explain storage concept; <p>Range: bit and byte.</p>	<p>Storage concept when they:</p> <ul style="list-style-type: none"> • Define storage concept; <p>Range: ASCII code Binary codes Bits and bytes Kilobytes Megabytes and Terabytes; <ul style="list-style-type: none"> • Describe ROM as Read Only Memory used by the operating system; • Describe RAM memory and its purpose in the processing of information; • Differentiate between RAM and ROM; <p>Range: volatile and non-volatile memory</p> <ul style="list-style-type: none"> • Describe the flow of information between memory. </p>	<p>Storage concept when they:</p> <ul style="list-style-type: none"> • Describe the two memories (RAM and ROM); <p>Range: Volatile vs non-volatile Magnetic Optical; <ul style="list-style-type: none"> • Describe the flow of information between memory (RAM, ROM, Hard Disk Drive); <p>Range: volatile vs non-volatile magnetic optical; <ul style="list-style-type: none"> • Explain storage concepts and the relation between them in terms of simple ASCII code and binary numbers; <p>Range: ASCII code Binary codes Bits and bytes Kilobytes Megabytes and terabytes; <ul style="list-style-type: none"> • Describe other forms of data that are stored; <p>Range: graphical (bitmap, jpeg) video (avi, mpg) audio (wav, mps); <ul style="list-style-type: none"> • Describe data compression techniques; <p>Range: lossy and loseless <ul style="list-style-type: none"> • Differentiate between lossy and loseless compression techniques </p></p></p></p></p>

Sub-strand 3: OPERATING SYSTEM

Students are able to demonstrate skills and understanding of:

YEAR 9	YEAR 10	YEAR 11	YEAR 12
<p>The purpose and functions of the operating system when:</p> <ul style="list-style-type: none"> • Define Operating System; • Describe features of a computer desktop monitor; <p>Range: start button icon background display;</p> <ul style="list-style-type: none"> • Explain what GUI is; • Identify a basic elements of GUI (Graphical User Interface); <p>Range: mouse pointer and click actions icon menu toolbars command buttons check list boxes option buttons dialog boxes.</p>	<p>The purpose and functions of the operating system when:</p> <ul style="list-style-type: none"> • Explain Operating System • Give examples of operating system; <p>Range: Windows Linux DOS etc;</p> <ul style="list-style-type: none"> • Describe basic elements of GUI (Graphical User Interface) <p>Range: mouse pointer and click actions icon menu toolbars command buttons check list boxes option buttons dialog boxes.</p>	<p>The purpose and functions of the operating system when:</p> <ul style="list-style-type: none"> • Define Operating System (system software); • Explain the general function of the operating system; • Explain disk-based operating system; <p>Range: computer</p> <ul style="list-style-type: none"> • Explain the difference between disk-based and chip-based operating system; • Explain why GUI is user friendly; <p>Range: mouse pointer and click actions icon menu toolbars command buttons check list boxes option buttons dialog boxes tree structure.</p>	<p>The purpose and functions of the operating system when:</p> <ul style="list-style-type: none"> • Describe the desktop computer's operating system and its six functions; <p>Range: Processor management Memory management Device management Storage management Application interface User Interface;</p> <ul style="list-style-type: none"> • Identify and describe chip-based and disk-based operating systems; <p>Range: digital cameras gaming systems digital media players cellphones calculators;</p> <ul style="list-style-type: none"> • Explain disk-based operating system; <p>Range: computer</p> <ul style="list-style-type: none"> • Explain the elements and concepts of GUI and give examples.

Sub-strand 4: PERSONAL COMPUTER SOFTWARE			
Students are able to demonstrate skills and understanding of:			
YEAR 9	YEAR 10	YEAR 11	YEAR 12
<p>The purpose of different types of computer software when they:</p> <ul style="list-style-type: none"> • Define computer software; • Explain the difference between hardware and software. 	<p>The purpose of different types of computer software when they:</p> <ul style="list-style-type: none"> • Explain the relationship between hardware and software; • List examples of application software; <p>Range: Word Excel Access PowerPoint Publisher etc.;</p> <ul style="list-style-type: none"> • Give example of common application software; <p>Range: Word-processing Spreadsheet Database.</p>	<p>The purpose of different types of computer software when they:</p> <ul style="list-style-type: none"> • Differentiate between system software (operating system) and application software; • Describe purpose of common application software; <p>Range: Word-processing Spreadsheet Database.</p>	<p>The purpose of different types of computer software when they:</p> <ul style="list-style-type: none"> • Explain purpose of application software and give examples; <p>Range: Word-processing (Word) etc. Spreadsheet (Excel) etc. Database (Access) etc. Programming (Java) etc. Graphics (Photoshop) etc. PowerPoint etc. Communication (Outlook) etc.</p>

Sub-strand 5: FILE MANAGEMENT

Students are able to demonstrate skills and understanding of:

YEAR 9	YEAR 10	YEAR 11	YEAR 12
<p>File Management procedure when they:</p> <ul style="list-style-type: none"> • Define a file; • Define a folder; • Explain the differences between a folder and a file; • Explain file management; <p>Range: file, folder, hierarchy structure, file path</p> <ul style="list-style-type: none"> • Explain the importance of labeling directories/folders; • Explain the need to use descriptive and meaningful names when naming files/folders; • Identify the different panes in Windows Explorer; <p>Range: folders, files, all contents;</p> <ul style="list-style-type: none"> • Demonstrate file management operations; <p>Range: create, open, close, copy, rename, moving, deleting a file or folder</p> <ul style="list-style-type: none"> • Demonstrate appropriate handling of flash drives and CDs so as to avoid damage; • Explain the difference between Save and Save As; • Explain why it is important to save regularly; • Explain what a virus is; • Explain the function of an anti-virus program. <p>Range: create, open, copy, rename, move, delete, close.</p>	<p>The purpose of file management when they:</p> <ul style="list-style-type: none"> • Differentiate between a file and a folder; • Explain file management; • Explain the importance of labeling directories/folders; • Describe the importance of naming files with descriptive and meaningful names; • Identify different panes of Windows Explorer; <p>Range: folders, files, all content;</p> <ul style="list-style-type: none"> • Demonstrate navigating along the file hierarchy; <p>Range: file address/pathway;</p> <ul style="list-style-type: none"> • Demonstrate file management operations; <p>Range: create, open, close, copy, rename, moving, deleting a file or folder</p> <ul style="list-style-type: none"> • Demonstrate appropriate handling of flash drives and CDs so as to avoid damage; • Explain the difference between Save and Save As; • Explain why it is important to save regularly; • Explain what a virus is; • Explain the function of an anti-virus program. 	<p>The concept of creating files when they:</p> <ul style="list-style-type: none"> • Describe the purposes of file management; <p>Range: folders, files, hierarchies;</p> <ul style="list-style-type: none"> • Explain the use of labeled directories (folders) and the advantages of grouping files within them; • Create, locate and display the contents of directories (folders and files); <p>Range: file hierarchy and file pathway, file address, file extensions;</p> <ul style="list-style-type: none"> • Open a file from a folder; • Copy, rename and move files to different directories (folders) and delete a file; • Explain the difference between Save and Save As; • Explain anti-virus procedures to protect data and a personal computer; <p>Range: what it is, what they are, how to prevent viruses;</p>	<p>The importance of protect and packing-up computer files when they:</p> <ul style="list-style-type: none"> • Explain the concept of Creating a File by using the SAVE Option; • Search a file using an appropriate SEARCH character; • Describe file/folder naming convention; <p>Range: (txt, exe, xls, doc, mdb, pdf);</p> <ul style="list-style-type: none"> • Create, locate and display the contents of directories (folders); • Read the file directories and identify pathways; • Copy, rename, and move files to different directories (folders) and delete a file; • Explain the importance of regularly saving and backing-up files; • Handle storage media appropriately so as to avoid damage; <p>Range: CDs, flash/external device;</p> <ul style="list-style-type: none"> • Explain why computer system need protecting against computer viruses using appropriate anti-virus software; • Name an anti-virus software; • Explain how computers can be damaged or destroyed by the following; <p>Range: malware, virus, cyber-attacks, spyware;</p>

Sub-strand 6: KEYBOARDING SKILLS

Students are able to demonstrate skills and understanding of:

YEAR 9

File Management procedure when they:

- Name and Identify keys on a QWERTY keyboard;

Range:

Function keys
Control keys (Ctrl, Alt, Shift)
Document keys (Home, End, Insert, Delete)
Numeric keypad (Num Lock);

- Label keys on a QWERTY keyboard;

Range: function, document, numeric keypad, alphanumeric;

Demonstrate understanding of keyboarding skills when they:

- Identify the positions of each letter on the keyboard;
- Demonstrate how to correctly finger all the characters on the keyboard;
- Demonstrate how to correctly place their fingers on the home keys;
- State the correct fingering of the following keys;

Range: semi-colon, full-stop, comma, slash;

- Demonstrate the use of the shift key to produce capital letters and symbols;
- Demonstrate the correct way to turn on and off the Caps Lock key;
- Demonstrate typing of capital letters;
- Demonstrate input of written information while looking at the monitor;
- Demonstrate copied written information while looking at the texts being copied;
- Demonstrate the correct fingering for the numbers zero to nine;
- Demonstrate the input of numeric information from the numeric keypad.

YEAR 10

File Management procedure when they:

- Name and Identify keys on a QWERTY keyboard;

Range:

Function keys
Control keys (Ctrl, Alt, Shift)
Document keys (Home, End, Insert, Delete)
Numeric keypad (Num Lock);

- Label keys on a QWERTY keyboard;

Range: function, document, numeric keypad, alphanumeric;

Demonstrate understanding of keyboarding skills when they:

- Identify the positions of each letter on the keyboard;
 - Demonstrate how to correctly finger all the characters on the keyboard;
 - Demonstrate how to correctly place their fingers on the home keys;
 - State the correct fingering of the following keys;
- Range:** semi-colon, full-stop, comma, slash;
- Demonstrate the use of the shift key to produce capital letters and symbols;
 - Demonstrate the correct way to turn on and off the Caps Lock key;
 - Demonstrate typing of capital letters;
 - Demonstrate input of written information while looking at the monitor;
 - Demonstrate copied written information while looking at the texts being copied;
 - Demonstrate the correct fingering for the numbers zero to nine;
 - Demonstrate the input of numeric information from the numeric keypad.

Sub-strand 7: ETHICAL ISSUES AND SOCIETY

Students are able to demonstrate skills and understanding of:

YEAR 9	YEAR 10	YEAR 11	YEAR 12
<p>The impact of computers in society with reference to ethical issues when they:</p> <ul style="list-style-type: none"> • Define ethical issues; • Identify different ethical issues; <p>Range: Software piracy Individual privacy;</p> <ul style="list-style-type: none"> • Explain the advantages and disadvantages of using a computer in your home; • Explain the negative and positive impacts of computers in society. 	<p>The impact of computers in society with reference to legal, ethical and social issues when they:</p> <ul style="list-style-type: none"> • Define ethical and legal issues; • Discuss different ethical issues; <p>Range: Software piracy Copyright Individual privacy;</p> <ul style="list-style-type: none"> • Explain how computer are used in your community; • Discuss the impacts of computers in society; <p>Range: negative positive.</p>	<p>The impact of computers in society with reference to legal, ethical and social issues when they:</p> <ul style="list-style-type: none"> • Differentiate between ethical and legal issues; • Explain and discuss different ethical issues; <p>Range: Individual privacy Corporate confidentiality Information piracy, copyright piracy (information/software/music etc.);</p> <ul style="list-style-type: none"> • Give examples of ethical/unethical issues; <p>Range: Individual privacy Corporate confidentiality Information piracy Copyright piracy (information/software/music, etc.);</p> <ul style="list-style-type: none"> • Identify and discuss the impact of computers with reference to Samoa in particular and possible effects on society; <p>Range: Employment opportunities Further education Communication (e-mail and promotion).</p>	<p>The impact of computers in society with reference to legal, ethical and social issues when they:</p> <ul style="list-style-type: none"> • Identify and discuss legal and ethical issues; <p>Range: individual privacy, intellectual property, corporate confidentiality, piracy, copyright, security and protection;</p> <ul style="list-style-type: none"> • Demonstrate how these controls the responsibility of people in accessing data at all times; • Discuss the changing nature of work and enterprises due to the availability of computers; <p>Range: employment, telecommuting, virtual office, video conferencing, EFTPOS, ATM;</p> <ul style="list-style-type: none"> • Discuss equity issues relating to computers; <p>Range: gender, disability and culture.</p> <p>People's responsibility when they:</p> <ul style="list-style-type: none"> • Describe key roles within the information and software technology; • Examine the contribution of people to the field of information and software technology; <p>Range: Project Manager, System Analyst, Software Engineer, Network Engineer, Multimedia Specialists;</p> <ul style="list-style-type: none"> • Contribution of people to maintaining computer Hardware/Software; <p>Range: programmers, data entry operators, technicians such as repair, maintenance, support staff such as help desk, training specialists, users.</p>

STRAND 2: USING PERSONAL COMPUTER APPLICATIONS

MAJOR LEARNING OUTCOME

Students are able to demonstrate understanding of basic skills in using a word processor, spreadsheet and a single table database

Sub-strand 1: WORD PROCESSING

YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<p>Word-processing principles and terminology when they:</p> <ul style="list-style-type: none"> Define word processor; Identify advantages and disadvantages of using a word processor; Open and exit word-processing program; Identify icons and apply common formatting options; <p>Range: bold, italics, underline fonts and font sizes paragraph alignments line spacing bullets/numbering;</p> <ul style="list-style-type: none"> Identify icons and apply common editing options; <p>Range: delete, copy and paste, cut and paste;</p> <ul style="list-style-type: none"> Name the ribbons where the selected common formatting and editing options are found; 	<p>Functions of a word processor when they:</p> <ul style="list-style-type: none"> Explain word-processing term; List common word-processing tasks; Range: letter, memo, assignment, timetable; Identify and apply selected formatting icons; <p>Range: bullets, automatic numbering Increase/decrease indentations, line spacing;</p> <ul style="list-style-type: none"> Define indentation - increase and decrease; Edit text using simple command options; <p>Range: delete copy and paste cut and paste find and replace.</p>	<p>Functions and uses of a word processor when they:</p> <ul style="list-style-type: none"> Discuss principles of word processing; <p>Range: document creation, retrieval editing formatting storing printing business and personal use; <ul style="list-style-type: none"> Identify at least two word-processing programs; Identify toolbars and ribbons; <p>Range: menu, formatting, standard;</p> <ul style="list-style-type: none"> Explain word-processing terms; <p>Range: spell check, thesaurus, wysiwyg, grammar error, font type, sizes(points), style, proportional and fixed spacing, word wrap; <ul style="list-style-type: none"> Select appropriate fonts. </p></p>	<p>Functions and uses of word processor when they:</p> <ul style="list-style-type: none"> Explain the difference between a text processor and a document processor; Understand the principles of word-processing; <p>Range: document creation, retrieval, editing, formatting, storing, printing;</p> <ul style="list-style-type: none"> Define current word-processing concepts; <p>Range: spell-check thesaurus wysiwyg word-wrapping;</p> <ul style="list-style-type: none"> Understand font terminology; <p>Range: font, type (serif, sans-serif) size (point) style (bold, italics, underline) proportional and fixed spacing.</p>

Sub-strand 1: WORD PROCESSING

YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<ul style="list-style-type: none"> • Define word wrap; • Insert text; • Select or highlight text; Range: certain consecutive characters, words, sentence, paragraph, block of text; • Copy and paste selected text; • Cut and paste selected text; • Insert and edit a picture from clipart; Range: resize, crop, move to a different location; • Save file with or without changes; 	<ul style="list-style-type: none"> • Change font, font size and font colour; • Change line spacing; Range: <ul style="list-style-type: none"> single line spacing 1.5 line spacing double line spacing; • Name and apply the four text alignments; Range: left, right, center, justify. Insert and edit a picture/shapes; • Select paper size (e.g., A4); • Name the two types of paper orientation; • Change paper orientation; • Define word wrap; • Set new margins; • Save file with or without changes; 	<p>Access and exit from a word-processing program and make equipment adjustments when they:</p> <ul style="list-style-type: none"> • Load and exit a word-processing program; • Open and close files; • Use the help features. <p>Word-processing principles and functions to enter, edit and format text when they:</p> <ul style="list-style-type: none"> • Demonstrate their ability to use the cursor and insert/type-over functions; • Enter and edit text; Range: highlight (select), cut, copy, paste, drag and drop, backspace, delete, undo, redo. <p>Format text;</p> <ul style="list-style-type: none"> Range: bold, underline, italic, alignment, increase indent, decrease indent, bullets and numbering, paragraph, line spacing, page borders; • Use search, find and replace options; <p>Use word-processing principles and functions to operate system features and produce files when they:</p> <ul style="list-style-type: none"> • Use tab setting options; Range: left, right, center, decimal • Create tables Range: insert, draw, add, delete, column and row adjustment, merging and splitting cells. 	<p>Command options when they:</p> <ul style="list-style-type: none"> • Identify and demonstrate the use of common command buttons and options depending on word processor version used. <p>Word-processing principles and functions to enter, edit and format document when they:</p> <ul style="list-style-type: none"> • Enter and edit text, format text; Range: select, move, cut, copy, paste, search, find, replace text, text box, columns, undo, redo; • Format paragraphs; Range: margins, tabulation, alignment, line spacing, indenting, bullets and numbering; • Format pages; Range: page numbering, margins, headers and footers, orientation, borders and shading; • Create tables Range: insert, draw, add, delete, column and row adjustment, merging and splitting cells; • Select appropriate fonts; • Use common word-processing tools; Range: spell-checking, thesaurus, dictionary, mail merge. <p>Use word-processing data security procedures when they:</p> <ul style="list-style-type: none"> • Explain why files should be regularly saved while working.

Sub-strand 2: SPREADSHEET			
YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<p>Spreadsheet principles and terminology when they:</p> <ul style="list-style-type: none"> • Define spreadsheet; • Explain the advantages of using a spreadsheet; • Identify features of spreadsheet; <p>Range: columns, rows, cells, name box, worksheet, sheet tabs, etc.</p> <ul style="list-style-type: none"> • Name a spreadsheet program used at your school (or any other spreadsheet program if your school is not using computers); • List different spreadsheet programs; • Open and close files; • Load and exit spreadsheet program; • Identify cell references; • Name cell types; <p>Range: text/labels, number/value, formulae;</p> <ul style="list-style-type: none"> • Demonstrate the ability to move the cursor through the spreadsheet; <p>Range: arrow keys, home, Ctrl + home, using the mouse.</p>	<p>Functions of a spreadsheet when they:</p> <ul style="list-style-type: none"> • Explain features of a spreadsheet; <p>Range: column, rows, cells, name box, worksheet, sheet tab, formula bar; <ul style="list-style-type: none"> • Explain the advantages of using a spreadsheet; • Name and list different spreadsheet programs; • Identify cell references; • Name cell types; <p>Range: text/labels, number/value, formulae</p> <ul style="list-style-type: none"> • Load and exit a spreadsheet program; • Open and close files; • Demonstrate data input to create a simple spreadsheet; • Demonstrate the ability to move the cursor through the spreadsheet; <p>Range: arrow keys, home, Ctrl + home, using the mouse.</p> </p>	<p>Uses of spreadsheet when they:</p> <ul style="list-style-type: none"> • Describe the advantages of using a spreadsheet; • Identify at least two different spreadsheet programs; • Identify cell references; • Identify cell types; <p>Range: labels, values, formulae.</p> <p>Produce a simple file containing labels, values and mathematical formulae when they:</p> <ul style="list-style-type: none"> • Load and exit a spreadsheet program; • Open and close files; • Use the help features; • Demonstrate the ability to move the cursor through the spreadsheet; <p>Range: arrow keys, home, Ctrl + home, using the mouse</p> <ul style="list-style-type: none"> • Use spreadsheet formulae to calculate values; <p>Range: operators (addition, subtraction, multiplication, division) formulae (relative cell reference), functions (SUM, AVERAGE, MIN, MAX, COUNT, COUNTA, PRODUCT).</p>	<p>Spreadsheet when they:</p> <ul style="list-style-type: none"> • Understand cell referencing/addressing; • Identify cell types; <p>Range: text/label, numbers/value, formulae;</p> <p>File containing labels, values and mathematical formulae when they:</p> <ul style="list-style-type: none"> • Use spreadsheet functions to enter and edit formulae; <p>Range: Function (SUM, AVERAGE, COUNT, COUNTA, IF-ELSE, MAX, MIN, PRODUCT);</p> <p>Standard Mathematical Operations (ADD, SUBTRACT, DIVIDE and MULTIPLY, PERCENTAGE);</p> <p>Cell addressing (absolute and Relative);</p> <p>Format (cell width, justification, text and number format (decimal, dollar, percent), merge and center, borders and shading, wrap text, auto-fill);</p> <p>Undo, redo.</p>

Sub-strand 2: SPREADSHEET

YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<ul style="list-style-type: none"> • Create a proper spreadsheet layout; <p>Range: cell width alignment text and number formats (decimals, dollar and percent) merge and center borders and shading, text wrapping; <ul style="list-style-type: none"> • Demonstrate the ability to manage files; <p>Range: create, name, save, copy, rename, abandon changes, locate directories (folders), contents, locate files.</p> </p>	<ul style="list-style-type: none"> • Apply spreadsheet formulae to calculate values; <p>Range: Operators (ADDITIONS, SUBTRACTION, MULTIPLICATION, DIVISION); Formulae (relative cell reference); Function (SUM, AVERAGE, MIN, MAX);</p> <ul style="list-style-type: none"> • Create a proper spreadsheet layout; <p>Range: cell width, alignment, text and number format (decimal, dollar and percent), merge and center, borders and shading, text wrapping.</p> <p>Manage spreadsheet files when they:</p> <ul style="list-style-type: none"> • Demonstrate the ability to manage files; <p>Range: create, name, save, copy, rename, abandon changes, locate directories (folders), display directories (folders), content, locate files; <ul style="list-style-type: none"> • Identify entry errors; <p>Range: compare data with source, #DIV/0! #NAME? #####; <ul style="list-style-type: none"> • Print selection of the spreadsheet; <p>Manipulate data in a spreadsheet when they:</p> <ul style="list-style-type: none"> • Graph cell ranges within a spreadsheet; <p>Range: column, bar, line, pie.</p> </p></p>	<ul style="list-style-type: none"> • Create a proper spreadsheet layout; <p>Range: cell width, alignment, text and number formats (decimal, dollar and percent), merge and center, borders and shading, text wrapping.</p> <p>Manage spreadsheet files when they:</p> <ul style="list-style-type: none"> • Demonstrate the ability to manage files; <p>Range: create, name, save, copy, rename, abandon changes, locate directories (folders), display directories (folders), content, locate files; <ul style="list-style-type: none"> • Identify entry errors; <p>Range: compare data with source, #DIV/0! #NAME? #####; <ul style="list-style-type: none"> • Print selection of the spreadsheet; <p>Manipulate data in a spreadsheet when they:</p> <ul style="list-style-type: none"> • Graph cell ranges within a spreadsheet; <p>Range: column, bar, line, pie.</p> </p></p>	<p>Manage worksheets when they:</p> <ul style="list-style-type: none"> • Demonstrate ability to manage worksheets; <p>Range: copy, paste auto-fill name/rename/delete/insert worksheets; <ul style="list-style-type: none"> • Demonstrate data-integrity practices; <p>Range: compare data with source.</p> <ul style="list-style-type: none"> • Print a page or range of cells; <p>Range: preview, orientation.</p> <p>Manipulate the data in the spreadsheet when they:</p> <ul style="list-style-type: none"> • Graph cell ranges within a spreadsheet with appropriate labels using default settings; • Select data from different location to graph; <p>Range: column, bar, pie, line;</p> <ul style="list-style-type: none"> • Apply "what if" analysis to a spreadsheet; • Sort a range(s) of data on a given column. </p>

Sub-strand 3: DATABASES			
YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<p>Database principles and terminology when they:</p> <ul style="list-style-type: none"> • Define database; • Describe the advantages of using a database; • Name and list database programs; • Identify database object; <p>Range: tables, reports;</p> <ul style="list-style-type: none"> • Create a simple table; • Edit a table; <p>Range: delete, add, edit a record, delete a field;</p> <ul style="list-style-type: none"> • Switch object view; <p>Range: Design view Datasheet view;</p> <ul style="list-style-type: none"> • Sort data; <p>Range: Ascending Descending;</p> <ul style="list-style-type: none"> • Identify data types; <p>Range: auto number, text, number, date/time, currency;</p> <ul style="list-style-type: none"> • Explain a primary key; • Set a primary key; 	<p>Uses and features of databases when they:</p> <ul style="list-style-type: none"> • Describe the advantages of using a database; • Name and list a database program; • Compare a flat file as a database with one table of rows (records) and columns (fields) to a Relational database; • Identify database objects; <p>Range: tables, query, form, reports;</p> <ul style="list-style-type: none"> • Create a simple table; • Create a field; • Name and save a table; • Edit a table; <p>Range: delete, add, edit a record, delete a field;</p> <ul style="list-style-type: none"> • Switch object views; <p>Range: Design view Datasheet view;</p> <ul style="list-style-type: none"> • Sort data; <p>Range: Ascending Descending;</p> <ul style="list-style-type: none"> • Identify data types etc.; <p>Range: auto number, text, number, date/time, currency, yes/no;</p>	<p>Uses and features of databases when they:</p> <ul style="list-style-type: none"> • Describe the advantages of using a database; • Identify at least two database programs; • Compare a flat file as a database with one table of rows (records) and columns (fields) to a Relational database; • Define a Database Management System; • Differentiate between a Database Management System and a database file; • Identify database objects; <p>Range: tables, query, form, reports;</p> <ul style="list-style-type: none"> • Switch object views; <p>Range: Design view Datasheet view Report view.</p> <p>Table when they:</p> <ul style="list-style-type: none"> • Create fields; • Identify data types etc.; <p>Range: auto number, text, number, date/time, currency, yes/no;</p>	<p>Uses and features of databases when they:</p> <ul style="list-style-type: none"> • Define a database management system; • Differentiate between a database management system and a database file; • Describe the advantages of using a database; • Describe a database table as a collection of rows (records) and columns (fields); • Identify fields sizes and type; <p>Range: text, number, date/time, auto number;</p> <ul style="list-style-type: none"> • Create tables; <p>Range: Fieldnames Data types Descriptions;</p> <p>Manipulate data in a database when they:</p> <ul style="list-style-type: none"> • Enter or edit records in a table/forms; <p>Range: insert or delete a row (record) or column (field), enter, modify, undo data.</p>

Sub-strand 3: DATABASES

YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<ul style="list-style-type: none"> • Explain a primary key; • Set a primary key; • Explain a query; • Create, name and save a simple query; • Create, name and save a report using wizard. 	<ul style="list-style-type: none"> • Identify field properties; Range: decimal, field size, validation rule, validation text; • Explain and set a primary key; • Edit a table; Range: delete, add, edit a record, delete a field; • Name and save a table. <p>QUERIES when they:</p> <ul style="list-style-type: none"> • Explain the purpose of a query with/without a criteria; • Create a simple query in design view; <p>Range: SORT ascending, descending;</p> <ul style="list-style-type: none"> • Rung a query. <p>REPORTS when they:</p> <ul style="list-style-type: none"> • Explain the purpose of a report; • Create a report with the Report Wizard; • Sort data; <p>Range: Ascending Descending;</p> <ul style="list-style-type: none"> • Name and save a report; • Review and print a report. 	<ul style="list-style-type: none"> • Create SQL (Structured Query Language) statements; <p>Range: SELECT, FROM, WHERE, ORDER BY, (ASC and DESC), AND, OR, Logical and Comparison Operators IF-ELSE;</p> <ul style="list-style-type: none"> • Create a Query; <p>Range: Design View, SQL view, Criteria AND/OR, Conditional Operators, Logical Operators, Sort (Asc, Desc);</p> <ul style="list-style-type: none"> • Create a crosstab query; • Sort a table and/or query; • Use functions in query wizard, query design and SQL; <p>Range: Count, Average, Sum, Max, Min.</p> <p>Manage database files when they:</p> <ul style="list-style-type: none"> • Understand the need for data integrity practice; • Demonstrate data integrity practices; <p>Range: Compare data with source Input controls;</p> <ul style="list-style-type: none"> • Create reports; • Print reports and query outputs; • Create forms. <p>Exporting/importing data between computer applications when they:</p> <ul style="list-style-type: none"> • Export data from a database to a spreadsheet; • Import tables and graphs from a spreadsheet to a word processor; • Produce a simple report document incorporating data/graphs from a spreadsheet and/or database. 	

STRAND 3: FUNDAMENTALS OF COMPUTER PROGRAMMING

MAJOR LEARNING OUTCOME

Students are able to demonstrate skills and understanding of problem analysis principles, application of these principles to planning a computer programme and writing computer code from a structured diagram.

Sub-strand 1: PRINCIPLES OF PROBLEM ANALYSIS

YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<p>Fundamental principles of computer programming and terminology when they:</p> <ul style="list-style-type: none"> • Define computer programming; • Explain the purpose of a computer programming; • Give an example of a computer programming language; <p>Range: Java Python Pascal Cobol C++ etc.;</p> <ul style="list-style-type: none"> • Explain the role of a Computer Programmer; 	<p>Apply fundamental principles of problem analysis when they:</p> <ul style="list-style-type: none"> • Define problem; • Define algorithms; • Define a solution; • Explain problem analysis; <p>Range:</p> <ul style="list-style-type: none"> • Problem and analysis; • Apply simple problem analysis and solution making; • Explain and identify a simple logical flowchart; <p>Range: start, process, input, output, end.</p>	<p>Apply fundamental principles of problem analysis when they:</p> <p>Explain problem analysis and decision making to different situations; Explain a logic flowchart;</p> <p>Range: start, process, input, output, decision (loop, if, else), end.</p>	<p>Apply fundamental principles of problem analysis when they:</p> <ul style="list-style-type: none"> • Apply problem analysis and decision making to problems; • Apply principles of logic flowcharts in relation to problem solving; • Identify suitable algorithms to produce a solution. <p>Apply principles of planning for a computer programme when they:</p> <ul style="list-style-type: none"> • Research problems in terms of input/output requirements; • Evaluate the suitability of developing a computer programme to solve a problem.

Sub-strand 2: PLANNING FOR PROGRAMMING			
YEAR 9	YEAR 10	YEAR 11	YEAR 12
Students are able to demonstrate skills and understanding of:			
<p>Apply principles of planning for a computer programming when they:</p> <ul style="list-style-type: none"> • Draw a simple logical flow chart for a given problem. 	<p>Apply principles of planning for a computer programming when they:</p> <ul style="list-style-type: none"> • Plan problem analysis; • Write logic flowchart; • Apply problem analysis; • Apply principles of logic flowcharts in relation to problem solving; • Draw a simple flow chart for a given problem; • Write suitable algorithms to produce a solution; • Write an algorithm for a given problem. 	<p>Apply principles of planning for a computer programming when they:</p> <ul style="list-style-type: none"> • Name a feature of a good computer program; • List features of good computer programs; • Write problems in terms of input/output requirements. <p>Apply features of a computer programme that would solve a problem;</p> <ul style="list-style-type: none"> • Design the suitability of developing a computer programme to solve a problem. 	
Sub-strand 3: CODING A PROGRAM			
YEAR 12			
Students are able to demonstrate skills and understanding of:			
<p>Coding a given programme from a given structure diagram when they:</p> <p>Range: Computer programs operate using a variety of data structures;</p> <p>Within this range:</p> <ul style="list-style-type: none"> • Define & assign data types of variables; <p>Range: string, int, double, Boolean, char;</p> <ul style="list-style-type: none"> • Define & assign data type to constants. FINAL keyword. 	<p>Use a simple text editor to code simple program using programming language available in your school;</p> <p>Range: JAVA Python C/C++, etc.</p> <ul style="list-style-type: none"> • Display the full range of file management skills in creating the code files, and word-processing skills in writing the code; • Write program code as a solution to fulfill the given requirements of a problem. 		

Optional Strands

STRAND 4: COMPUTER GRAPHICS AND DESKTOP PUBLISHING

MAJOR LEARNING OUTCOME

Students are able to demonstrate knowledge, skills and understanding of basic skill of computer graphics, and features of desktop publishing to produce desktop publishing documents.

Sub-strand: Copmuter Graphics

YEARS 9 - 12

Students are able to demonstrate skills and understanding of:

Using a computer graphics program to show basic drawing skills when they:

- Plan the steps required to produce graphics;
- Demonstrate basic drawing skills;

Range: line oval, circle, rectangle, square, polygon, curve, text.

Drawing a picture using a computer graphics program when they:

- Use graphics to represent what is planned;
- Use graphics to demonstrate transformed images;

Range: move, resize, reshape, flip, rotate, modify level relative to other images, modify line weight, delete.

Using painting methods when they:

- Use graphics to demonstrate painting skills;

Range: brush, pencil, spray, erase, fill.

Printing computer graphics when they:

- Preview and print images;
- Set the printer to the appropriate resolution to print the image.

The uses and features of desktop publishing on a personal computer when they:

- Identify uses of desktop publishing;
- Demonstrate the principles of page layout appropriate to the document being produced;
- Identify desktop publishing and graphics applications;

Range: PageMaker, Microsoft Publisher, Paint, Photoshop, Escape, Scribus.

Producing desktop publishing documents when they:

- Load and exit a desktop publishing program;
- Use the Help features;
- Load a pre-formatted word-processed document onto a desktop publishing document and edit and reformat appropriately;
- Insert a graphic, resize and move it to an appropriate place in the document;
- Use shapes, headlines, multi-columns, text flow and other available options to enhance the document;
- Add and remove pages as required without loss of essential data.

Manage desktop publishing files when they:

- Identify the menu options;

Range: retrieve, edit, format, save and print;

- Demonstrate the ability to manage files;

Range: create, name, save, copy, rename, abandon changes, locate directories (folders), display directory (folder) contents and locate files;

- Print documents;
- Open and close files.

STRAND 5: VISUAL PRESENTATION

MAJOR LEARNING OUTCOME

Students are able to demonstrate understanding of skill, knowledge and basic skills of the uses of computer presentation software, i.e. Microsoft PowerPoint.

Sub-strand: PowerPoint Presentation

YEARS 9 - 12

Students are able to demonstrate skills and understanding of:

Computer presentation when they:

- Identify the advantages of computer based presentations;
- Identify a common presentation program;

Planning and outlining a presentation for a specific purpose when they:

- Create an outline of the presentation.

Creating a presentation when they:

- Construct a presentation based on the outline;
- Using various features to enhance presentation;

Range: animations, colour schemes, slide transitions, template (slide layout);

- Deliver the presentation.

Make a printout of the presentation when they:

- Print a presentation;

Range: slides, handouts (slides per page), notes pages.

STRAND 6: DIGITAL IMAGES

MAJOR LEARNING OUTCOME

Students are able to demonstrate understanding of skill, knowledge and basic skills of process digital images so as to change the properties of the original image.

Sub-strand: PROCESSING IMAGES

YEARS 9 - 12

Students are able to demonstrate skills and understanding of:

Identifying and using suitable image processing software when they:

- Import standard digital images into an image processing application;
- Save the image using a different format;
- Understand the differences between different image formats;

Range: bmp, jpg, gif.

Using imaging software to modify image properties when they:

- Change image size and orientation;

Range: rotation, resizing, cropping;

- Change colour intensity;

Range: brightness, intensity, gamma correction;

- Alter an image;

Range: sharpen, red-eye reduction, pixilation, blur, filter effects.

Using image software to produce image collages and panoramas when they:

- Merge two or more images to produce a new collage;

Range: cut, copy, paste, move;

- Use imaging software to produce a panoramic view;

- Add text to an image;

Saving processed images and export them to other applications when they:

- Import a processed image into another application;

Range: word processor, DTP application, web page;

STRAND 7: THE INTERNET

MAJOR LEARNING OUTCOME

Students are able to demonstrate understanding of skill, knowledge on the proper use of the internet for research and communication.

Sub-strand: THE INTERNET

YEARS 9 - 12

Students are able to demonstrate skills and understanding of:

Creating, sending and receiving e-mail and online research when they:

- Become aware of the Internet as valuable resource of information;

Examples: online encyclopedias, reference sites, news sites, etc.;

- Identify commonly used search engines;

Examples: Google, Yahoo, MSN, Lycos, etc.;

- Differentiate between reliable and unreliable sources of information;

- Use logical operators to refine a search.

Conducting online research when they:

- Successfully search the internet with a variety of methods on a chosen topic;

- Create a final document base on the search;

Range: word-processed report, web page, presentation;

- Create a bibliography based on the search to support the final document.

Planning the use of e-mail when they:

- Plan the steps to be followed and justify the tools to exchange e-mail messages;

- Describe the operating environment and basic system configurations;

- Understand e-mail addressing;

Range: user name, @, ISP address.

Creating e-mail when they:

- Identify and load e-mail software;

- Write message headers and appropriate content;

- Address the message correctly;

Range: single and multiple recipients;

- Ensure the message conforms to organization standards;

- Attach a document to the e-mail message;

Send, receive, organize and save e-mail when they:

- Send an e-mail message as part of the research and show evidence that the message has been successfully delivered;

Range: sent items folder;

- Delete incoming messages;
 - Be aware of the danger of viruses in attachments;
 - Display and print incoming e-mail;
- Range:** message, attached document, inbox;
- Identify the origin of incoming e-mail;
 - Respond to incoming message using available application features;
- Range:** reply, forward, flag, block, delete, print;
- Organise e-mail messages and attachments;
- Range:** save, rename, copy, delete, locate, directory (folder), display directory (folder) contents, locate.

STRAND 8: DATA INTEGRATION

MAJOR LEARNING OUTCOME

Students are able to demonstrate understanding of skills, knowledge of integrating data from a range of sources such as word processor, spreadsheet and database program.

Sub-strand: INTEGRATE DATA

YEARS 10 - 12

Students are able to demonstrate skills and understanding of:

Integrating data from a range of sources in order to solve problems when they:

- Enter data given into appropriate programs;
- Range:** spreadsheet and database, and paste them onto a word-processing file;
- Perform specific tasks based on given data;
- Range:** graphs, tables, queries etc.;
- Copy/cut contents of a spreadsheet file and database file paste them onto a word-processing file;
- Range:** graph, table, data.

STRAND 9: DESIGN SIMPLE WEBSITES

MAJOR LEARNING OUTCOME

Students are able to demonstrate understanding of skills, knowledge of using a webpage generator to build a simple 3-page website.

Sub-strand: THE FUNDAMENTALS OF THE WORLD WIDE WEB

YEAR 12 (only)

Students are able to demonstrate skills and understanding of:

Describing, in general terms, the world wide web when they:

- Describe the history of WWW and the Internet;
- Describe the basic structure of the “web”;
- Understand and define fundamental concepts of the world wide web (WWW);

Range: domain names, URL, ISP.

Building a simple web site using a web page generator when they:

- Build a simple 3 page website;

Range: index/home page, linked pages, hyperlinks;

- Inset and format text;

Range: standard word-processing format options;

- Insert pictures and other graphics;

- Display an understanding of the need to keep images small but visually clear;

Range: jpeg photos, gif files, resizing photos in imaging software;

- Use tables to anchor pictures to text.

Previewing and publishing web pages when they:

- Preview web pages in a browser. Examples: Internet Explorer, Firefox, Opera, Netscape, etc.;

- Understand how web pages are published to a web site;

Range: ISP, domain names, web addresses.

Understand the problems of delivering information over the Internet when they:

- Understand the difference between dial-up, broadband and wireless connections;

- Understand the problems of displaying images, video and sound;

Range: download speeds, image compression, audio compression.

STRAND 10: INTRODUCTION TO NETWORKING

MAJOR LEARNING OUTCOME

Students are able to demonstrate understanding of skills, knowledge of basic components of a network and set up a very simple one in a computer laboratory.

Sub-strand: INTRODUCTION TO NETWORKING

Year 12 (only)

Students are able to demonstrate skills and understanding of:

Basic components of a computer network when they:

- Define computer network;
- Give examples of computer network;
- Discuss the advantages of a computer network over the idea of having stand-alone computers in a lab;
Range: share resources – hardware *e.g., printer*, software *e.g., programs, files*; security purposes *e.g., avoid invasion of personal privacy*; limited privileges *e.g., unauthorized users cannot access certain/confidential information*;

- Discuss the disadvantages of a computer network;
Range: cost, training, need for a network administrator;

- Identify the basic network components usually referred to as the building blocks;
Range: at least two computers, network interface card (NIC), connection medium, network operating system;

- Describe with examples each of the basic components required for a simple network.

Identify network topologies when they:

- Define the word “topology”;
- Identify some of the network topologies;

Range: ethernet, star, ring;

- With the use of diagrams, explain how each of the three topologies works;
- Wide Area Networks (WANs) vs Local Area Networks (LANs).

Plan a computer network when they:

- Go through a sample basic network plan;
- Plan a simple network;
- Briefly explain what is done at each step of the network plan;
- Present a plan to the class.

Terms and Definitions

Accessories

Additional hardware or software to be used by the computer.

Active cell

The cell that is currently selected and is shown with a frame around it.

Alt

A key, on the keyboard that is used in combination with other keys to provide extra functions.

Application

Software Written to do a certain function. (e.g. word processor, calculator or solitaire game).

Ascending

Sort order where A is at the top of the list.

ASCII

American Standard Code for Information Interchange - a method for encoding characters in the computer.

Assembly Language

A language made to help programmers write in a level above-machine language, but still rather primitive.

Average

Statistical function that calculates the mean of a set of numbers.

Back up

The process in which the user moves all important data to a secondary device for safekeeping, or The act of writing the data and information to a second device for safekeeping. or The redundant files saved on the secondary device.

Backspace

For deleting one space to the left of the cursor.

Binary

A mathematical system that has two cases: 0 or 1.

Bit

A single binary number.

Border

A tool that allows you to place a box around text or numbers.

Borders

Frames put around a table, cell, or page.

Bullet

A character inserted before text to emphasize the text.

Byte

Eight bits or eight binary digits.

Bytes

This is the memory unit of the computer used for processing and storing data and instructions.

Carpal Tunnel Syndrome

A disease of the wrists often caused by using poor keyboard posture at a computer for long periods of time.

Cartridge Tape Drive

A storage device that uses tape cassettes to store data.

CD-ROM

A metal disk that spins around inside the computer with laser heads that move around the disk to read information or data.

Cell

Part of a table or spreadsheet where a column and row intersect.

Cell address

The combination of the column address and the row address that indicates the exact location of a cell.

Clicking

Pressing the left mouse button, used to highlight an item.

Column

A part of a table or spreadsheet: the vertical set of data.

Computer

A machine system capable of accepting, storing, processing and outputting data input by a user. or An electronic device, operating under the control of instructions stored in its own memory unit, which can accept data, process data arithmetically and logically, produce output from the processing and store the results for future use.

Computing

The act of performing calculations.

Content

A Help tool tab which gives you the list of topics contained in help.

Contents

What is contained in an area such as a cell in a spreadsheet.

Copy

Makes a copy of the selection and places it on the clipboard.

Copying

Making a second copy of a file, folder or application on another device or area.

CPU

Central Processing Unit, the brain of the computer made up of integer and floating point units.

Ctrl

Used in combination with other keys to extend the functionality.

Cut

Removes the selection from the document and puts it on the clipboard.

Data Representation

The way a number or text is stored in a computer.

Database

A collection of information.

Datasheet view

View in Access that allows you to view or enter actual data into the data base.

Delete

Removal of whatever is selected.

Descending

Sort order where the letter Z is first in the list.

Desktop

The screen area which is first presented to the user.

Directory

Similar to a drawer which holds different folders and files.

Diskette

A secondary storage device useful for transporting data from one computer to another. Also called "floppy disks," see also FLOPPY DRIVE.

Editing

The process of altering a document.

Email

Electronic mail: a tool that allows you to send and receive messages over the Internet.

Enter key

When this key is pressed it tells the computer to accept the instruction.

Ergonomics

The body of knowledge whose application is the design of tools, machines, systems, tasks, jobs, and environments for safe, comfortable and effective use.

ESC Key

In most applications used to cancel and to back out of the process.

Field

One data item in a database.

Files

Documents created by an application.

Flat file

A file in which all data is stored within one table.

Floppy Drive

A device on the front of the computer which accepts a diskette on which files can be saved or from which programmes can be installed. Usually the A:/ drive.

Folder

Similar to a manila folder which holds different documents (files) as well as other folders. See also DIRECTORY.

Font

A style of type.

Formatting

The process of changing the appearance and layout of a document.

Formatting disk drive

The process that removes all information from a drive and puts the sector cylinder marks in.

Function

A function is a formula that manipulates numerical data.

Function Keys

Programmable keys which perform special operations in many applications (e.g., F1, F2).

Hard Drive

Also called the C:\ Drive. This is used to save all work to the computer itself. OR A device that stores settings, programs and the operating system while the computer is off. It is simply a multitude of metal disks that spin around inside the computer, with heads that move around those disks. Those heads read and write data to the metallic disks.

Hardware

The physical parts of a computer that you can touch and feel. Any computer machinery that performs information processing functions. This is in contrast to the Software.

Input

The process of entering data into the computer, such as scanning or keyboarding.

Input Devices

Any part of the computer which is used to transfer data into a computer system for storage and processing e.g.: keyboard.

Internet

The electronic network that connects the computers together. A network of networks of millions of computers communicating with each other.

Keyboard

An input device for characters and numbers.

Machine Language

The lowest level of computer language written in numeric form.

Megabytes

A unit of memory equal to 2 raised to the 20th power, or 1024576 bytes.

Microprocessor

This is the central processor of a personal computer. They are identified by numbers such as 8086, 286, 386, 486, 586 and 686.

Modem

Device that converts signals from digital to analog and analog to digital for transmission and receiving, so that the digital data of a computer may be transmitted using analog signals over the telephone network.

Monitor

An output device that features the display screen.

Mouse

An input device used to position the cursor on the screen.

Operating System

The parts of the computer system that control the hardware functions and interface with the application software.

Output Devices

Any part of the computer which is used to output any data or information e.g., printer.

Paste

Enters whatever is on the clipboard into the current document.

Printer

An output device that transfers data to paper.

Programming

The process of writing code or an application for a computer.

Query

A request whose response will be a list of records or fields of records in the database that satisfy that request.

RAM

Random Access Memory, The part of the computer storage system that stores programs and data during processing only as electricity flows through it.

Range

When more than one cell is selected in a spreadsheet the list of cell address is called the range.

Record

A set of data items related to each other.

ROM (Read Only Memory)

This is the memory chip that permanently stores instructions and data. When the computer is turned off, this memory still retains the information.

Root Directory

In a hierarchy of files and folders, the root directory always appears at the top level.

Search Engine

The tool that performs the search on the web based on web page content e.g., Google, Yahoo.

Shift Key

Used to type capitals and the top row characters. Can also be used in combination with ALT, CTRL and/or the function keys to provide extra functions.

Software

Programs that give the instructions to the computer as to what is to be done.

Sort

Organizing data in order, either alphabetical as A-Z or Z-A or if numerical, largest to smallest or reverse.

Spreadsheet

A grid of columns and rows.

Surge protector

A device that stops any large power surges entering the computer from the power supply.

Text

Any data that contains letters and numbers; it can not be used in arithmetic expressions.

UPS (Uninterruptible Power Supply)

A battery which is capable of supplying temporary power to the system when the main power fails. The advantage of this is to give the user time to save work before the computer is shut down.

Virus

A software program designed to deliberately damage the hardware, files or software of your computer, transmitted by diskettes, mail, or web downloads, and transformed to damage the host machine or transmit itself to other machines.

Web

Short for World Wide Web

Web Browser

A tool provided by some sites that allows you to search the Web for desired information.

Recommended Texts

Spreadsheet Skills

By Lois Anderson and David Esterman

Publisher: The MacMillian Company of New Zealand Ltd

ISBN: 0333 41656 2

Database Skills

By Lois Anderson and David Esterman

Publisher: The MacMillian Company of New Zealand Ltd

ISBN: 0333 41660 0

Spreadsheet Projects in Excel for Advanced Level

By Julian Mott and Ian Rendell

Publisher: Hodder & Stoughton Education

ISBN: 0 340 80007 0

Database Projects in Access for Advanced Level

By Julian Mott and Ian Rendell

Publisher: Hodder & Stoughton Education

ISBN: 0 340 80007 0

Click on to Computing

By Julia Hallas

Publisher: Pearson Education New Zealand Limited

ISBN: 0582 71894 5

