



South Pacific Form Seven Certificate

INFORMATION and COMMUNICATION TECHNOLOGY SYLLABUS

2023



GENERAL INFORMATION

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INFORMATION AND COMMUNICATION TECHNOLOGY

1. PREAMBLE

This syllabus defines the requirements for the South Pacific Form Seven Certificate Information and Computer Technology program.

This syllabus is derived from a revision of the 2020 EQAP syllabus in Information Technology and a wide review of international trends in senior secondary school Information and Computer Technology courses.

Information and Communication Technology continues to be a rapidly changing field which encompasses a very large realm. New trends in the study of ICT indicate rapid expansion of content, and what was relevant a short time ago has changed markedly. It is anticipated that this evolution will continue because there is no apparent end to developments in this particular technology.

This course is comparable in standard to other Year 13 courses available in the international field. The course is designed so students may continue their studies in ICT at a tertiary level or complete their formal education at the end of Year 13.

2. AIMS

Information and Communication Technology encompasses a vast realm of knowledge and skills. This course is designed to let the student explore a number of different aspects of that realm and to engender an attitude of challenge and exploration within these aspects. The use of ICT to generate original content is intended to encourage the student to experiment with the medium as a tool rather than as an end.

It is intended that students work in teams for particular sections so that they gain experience of how many ICT environments function.

It is intended that students should be able to see ICT as a means of creating a solution to problems and to be able to choose an appropriate tool from the vast number available to produce the solution.

This course is generic in its approach. It is recognised there are multiple ways in ICT to reach any endpoint. Students should recognise this and they should be encouraged to be creative within the medium to ensure they are fully engaged in the course.

Despite the overwhelming benefits that we share and experience in the use of new technological innovations, students should also understand that there are known issues that are becoming visible now that is affecting and will continue to affect the way we live and work. Such issues are presented in this course.



3. PRE-REQUISITES

Students should have completed a course of study in Computer Studies or its equivalent at Year 12 level.

Schools should ideally meet these conditions to ensure students succeed in ICT:

1. The school needs enough computers running WinXP or higher (or equivalent operating system) to give each student individual access to a computer for at least 1 hour per week.
2. ICT classes should be scheduled to use the computers for each teaching period.
3. The computers should be networked.
4. Internet access needs to be available, preferably regularly.

Teachers must see themselves as facilitators of learning rather than transmitters of knowledge. Teachers must acknowledge that in some areas their students will know more than them and they must use this to the advantage of the class rather than suppress student knowledge.

4. GENERAL OBJECTIVES

On completing this course students should be able to:

- use ICT to produce appropriate solutions to a variety of IT problems and utilise effective ICT tools to reach that solution
- recognise that ICT is a very large realm of knowledge and that further study in it will lead to greater specialisation in a narrowing field
- act as a responsible Digital Citizen who respects the law, the rights of others, and keeps safe in a digital world

5. CONTENT COMPONENTS

The content of the SPFSC ICT course is organised under five strands and a number of sub-strands under each strand. These, together with expected outcomes are outlined below:

Strand Number	Strand Title and Major Learning Outcome	Sub-strand Number	Sub-strand Title and Key Learning Outcome
1.	Digital Media <i>Students will be able to demonstrate knowledge application and critical evaluation of the differences between Open Source and Proprietary software and the use of digital media concepts</i>	1.1	Digital Media Applications and Sources <i>Students will be able to demonstrate knowledge application and critical evaluation of the key concepts behind the use of Open Source and Proprietary software, proper software assessments and sourcing digital media applications for installation</i>

	<i>in ICT to design and develop a media product</i>	1.2	Digital Media Concepts <i>Students are able to demonstrate knowledge application and critical evaluation of key digital media concepts and digital media</i>
		1.3	Digital Media Design/Processing <i>Students are able to demonstrate knowledge application and critical evaluation of designing and developing digital graphics, video and audio media output</i>
2.	Website Development <i>Students are able to demonstrate knowledge application and critical evaluation of the key concepts of web development, the use of web driven databases, network devices, and the use of data analytical and processing tools</i>	2.1	Web Design <i>Students are able to demonstrate knowledge application and critical evaluation of web design concepts and website development with media objects</i>
		2.2	Database Driven Website <i>Students are able to demonstrate knowledge application and critical evaluation of process of developing a database-driven website using available cross-platform web developing tools</i>
		2.3	Managing Information and ICT Infrastructure (Hardware and software) <i>Students are able to demonstrate knowledge application and critical evaluation of the relationship between choices of devices, networking, and data processing tools in order to accomplish a project or access online resources</i>
3.	Programming <i>Students are able to demonstrate knowledge application and critical evaluation of programming concepts through the use of appropriate programming languages</i>	3.1	Problem Solving <i>Students are able to demonstrate knowledge application and critical evaluation of the problem-solving process in preparing for a programming project</i>
		3.2	Stages of Programming <i>Students are able to demonstrate knowledge application and critical evaluation of constructing a solution to a specific problem using design tools and the stages of programming</i>

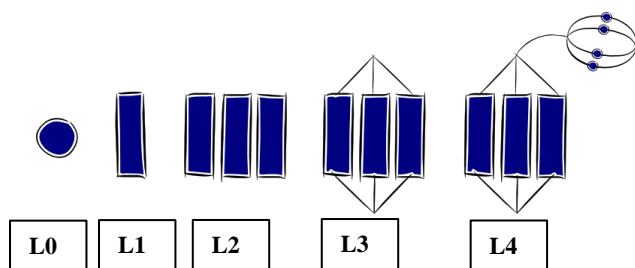
			Coding <i>Students are able to demonstrate knowledge application and critical evaluation of coding by constructing a solution to an identified problem using a programming language and following established coding practices</i>
		3.3	
4.	Microprocessor Control <i>Students are able to demonstrate knowledge application and critical evaluation of the principles of microprocessor control and the use of programmable microprocessors to control embedded devices</i>	4.1	Programmable Microprocessor <i>Students are able to demonstrate knowledge application and critical evaluation of the concepts of microprocessors</i>
		4.2	Embedded Devices <i>Students are able to demonstrate knowledge application and critical evaluation of the use of programmable microprocessors to control embedded devices to perform tasks</i>
5.	Issues in ICT <i>Students are able to demonstrate knowledge application and critical evaluation of the major concerns with the use of ICT and important measures that can minimise the concerns or provide a level of safety and security</i>	5.1	Ethical & Social Issues <i>Students are able to demonstrate knowledge application and critical evaluation of ethical and social issues in relation to the use of ICT</i>
		5.2	Environmental Issues <i>Students are able to demonstrate knowledge application and critical evaluation of the environmental issues relating to the increasing use of ICT</i>
		5.3	Health Issues <i>Students are able to demonstrate knowledge application and critical evaluation of health issues related to using ICT equipment</i>
		5.4	Safety & Security Issues <i>Students are able to demonstrate knowledge application and critical evaluation of safety and security practices in ICT</i>



6. UNPACKING LEARNING OUTCOMES

In this syllabus, Learning Outcomes are stated at three levels of generality: Major Learning Outcomes (MLOs) are stated at the strand level, Key Learning Outcomes (KLOs) are stated at the sub-strand level, and Specific Learning Outcomes (SLOs) are unpacked from the Key Learning Outcomes. Each SLO is a combination of cognitive skill and a specific content component. Each SLO is given a skill level, level 1 – 4, and this skill level results from the categorisation of the cognitive skill that is embedded in the SLO using the SOLO taxonomy¹.

The SOLO taxonomy provides a simple, reliable and robust model for three levels of understanding – surface, deep, and conceptual (Biggs and Collis 1982).



At the **prestructural** level (L0) of understanding, the task is inappropriately attacked, and the student has missed the point or needs help to start. The next two levels, unistructural and multistructural are associated with bringing in information (surface understanding). At the **unistructural** level (L1), one aspect of the task is picked up, and student understanding is disconnected and limited. The jump to the multistructural level is quantitative. At the **multistructural** level (L2), several aspects of the task are known but their relationships to each other and the whole are missed. The progression to relational and extended abstract outcomes is qualitative. At the **relational** level (L3), the aspects are linked and integrated and contribute to a deeper and more coherent understanding of the whole. At the **extended abstract** level (L4), the new understanding at the relational level is re-thought at another conceptual level, looked at in a new way, and used as the basis for prediction, generalisation, reflection, or creation of new understanding (adapted from Hook and Mills 2011). [<http://pamhook.com/solo-taxonomy/>]

The progression from Level 1 to Level 4 is exemplified in the progression from *define* □ *describe* □ *explain* *discuss* with each succeeding level indicating a *higher level of understanding*, as follows:

- define – to state a basic definition of a concept [Unistructural or L1]
- describe – to give the characteristics of, or give an account of, or provide annotated diagrams. [Multistructural or L2]
- explain – to provide a reason for a relationship – an event and its impact, a cause and an effect, as to how or why something occurs. [Relational or L3].
- discuss – this means linking ideas (descriptions, explanations) to make generalisations or predictions or evaluations. It may involve relating, comparing, analysing, and justifying. [Extended Abstract or L4].

¹ Structure of Observed Learning Outcomes by Biggs and Collis (1982)

7. STRANDS, SUB-STRANDS, AND LEARNING OUTCOMES

Strand 1: Digital Media

Major Learning Outcome (Inf1):

Students are able to demonstrate knowledge application and critical evaluation of the differences between Open Source and Proprietary software and the use of digital media concepts in ICT to design and develop a media product.

Sub-strand 1.1: Digital Media Applications and Sources (IA and EA)

Key Learning Outcome (Inf1.1):

Students are able to demonstrate knowledge application and critical evaluation of the key concepts behind the use of Open Source and Proprietary software, proper software assessments and sourcing digital media applications for installation.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	name a category of software within a context. [Open Source or Proprietary]	1	Inf1.1.1.1
2.	state an example of Source Code within a context.	1	Inf1.1.1.2
3.	state a known feature / example of an Open Source/Proprietary software.	1	Inf1.1.1.3
4.	outline the main strengths/weaknesses of Open Source/Proprietary software.	2	Inf1.1.2.1
5.	compare and contrast Open Source and Proprietary software in terms of key strengths and weaknesses.	3	Inf1.1.3.1
6.	justify the need for an organisation to promote the use of Open Source or Proprietary software within the context of its work.	4	Inf1.1.4.1
7.	describe the main objectives of the Open Source software movement.	2	Inf1.1.2.2
8.	explain the importance / economic impact of the Open Source software movement to the software industry.	3	Inf1.1.3.2
9.	evaluate the motivations behind the Open Source software movement as it continues to influence software development around the world.	4	Inf1.1.4.2
10.	discuss the economic impacts of the Open Source usage on the competitiveness of the ICT sector.	4	Inf1.1.4.3
11.	outline the legal rights for a purchased software.	2	Inf1.1.2.3



12.	explain the relationship between legal rights for purchased software and the protection of software developers.	3	Inf1.1.3.3
13.	discuss the on-going legal issues around the protection of purchased software agreements or licensing using examples.	4	Inf1.1.4.4
14.	install Open Source/Proprietary media applications from the internet.	2	Inf1.1.2.4
15.	outline the uninstallation process of the Open Source/Proprietary media applications.	2	Inf1.1.2.5
16.	un-install a software completely using the uninstallation process.	2	Inf1.1.2.6

Sub-strand 1.2: Digital Media Concepts (EA)

Key Learning Outcome (Inf1.2): *Students are able to demonstrate knowledge application and critical evaluation of key digital media concepts and digital media.*

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	name a specific use of digital media.	1	Inf1.2.1.1
2.	list the different types of digital media.	2	Inf1.2.2.1
3.	describe the common uses of digital media that are very popular today.	2	Inf1.2.2.2
4.	explain how the world today is benefitting from digital media.	3	Inf1.2.3.1
5.	discuss the impacts of digital media as it continues to change the face of media around the world today.	4	Inf1.2.4.1
6.	name a popular digital media company.	1	Inf1.2.1.2
7.	describe an element of graphics design.	2	Inf1.2.2.3
8.	explain the effects of following the basic elements of design on any graphics design task.	3	Inf1.2.3.2
9.	discuss the visible effects of following the basic elements of design on a company's expected graphics design output using examples.	4	Inf1.2.4.2
10.	outline the key benefits of using appropriate graphics cards.	2	Inf1.2.2.4
11.	name an important feature of a graphics card/graphics design software.	1	Inf1.2.1.3
12.	describe the main function of common/unique features that exist in graphics design software.	2	Inf1.2.2.5
13.	explain the importance of using appropriate design software for a given graphics design task.	3	Inf1.2.3.3
14.	discuss the challenges faced by professional graphic designers when selecting appropriate design software for an important design task and how these challenges are addressed.	4	Inf1.2.4.3



15.	outline different types of tasks that require the use of graphic design software.	2	Inf1.2.2.6
16.	outline the process used for designing an animated object.	2	Inf1.2.2.7
17.	explain the benefits of using animated objects for enhancing an important design.	3	Inf1.2.3.4
18.	discuss the importance of using animated objects as part of a design strategy to convey marketing information for a given company.	4	Inf1.2.4.4
19.	explain the importance of following key design standards or principles by a professional graphic designer when working on a company's graphic design task.	3	Inf1.2.3.5
20.	discuss the importance of critical thinking for a graphic designer when preparing for an important graphic design task to be used as part of a marketing strategy.	4	Inf1.2.4.5
21.	name an appropriate video peripheral for a given event.	1	Inf1.2.1.4
22.	outline the functions of a given video peripheral.	2	Inf1.2.2.8
23.	describe the common features of video processing or editing software.	2	Inf1.2.2.9
24.	explain the significance of key features for selecting an appropriate video processing or editing software for developing video files.	3	Inf1.2.3.6
25.	discuss the importance of video production standards for developing a complete and successful video output for marketing purposes.	4	Inf1.2.4.6
26.	outline the functions of an audio peripheral.	2	Inf1.2.2.10
27.	describe the common features of audio processing or editing software that can be used to apply effects on audio files.	2	Inf1.2.2.11
28.	explain the importance of the key features of audio processing software for developing audio files.	3	Inf1.2.3.7
29.	evaluate a given audio processing software that is appropriate for creating a complete audio project using the industry's best practices.	4	Inf1.2.4.7
30.	outline the requirements for developing an audio output for a given event.	2	Inf1.2.2.12
31.	discuss the importance of the digital audio evolution as it continues to influence the audio technology industry.	4	Inf1.2.4.8

Sub-strand 1.3: Digital Media Design/ Processing (IA and EA)

Key Learning Outcome (Inf1.3):

Students are able to demonstrate knowledge application and critical evaluation of designing and developing digital graphics, video and audio media outputs.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	open media files using media applications.	2	Inf1.3.2.1
2.	use basic graphics design features on a graphics item.	2	Inf1.3.2.2
3.	design an animated task/graphics but a complete graphics item using a graphics design software.	3	Inf1.3.3.1
4.	produce a complete animated task/basic graphics task using a graphics design software to meet a given design requirement.	4	Inf1.3.4.1
5.	use the basic audio processing features of an audio processing software to edit an audio item.	2	Inf1.3.2.3
6.	apply advanced features of an audio processing software on an audio item.	3	Inf1.3.3.2
7.	design a basic but complete audio item using an audio processing software.	3	Inf1.3.3.3
8.	produce a complete audio item using an audio processing software to meet a given requirement.	4	Inf1.3.4.2
9.	use the basic video processing features of a video processing software to develop a video item.	2	Inf1.3.2.4
10.	apply advanced editing features of a video processing software on a video item.	3	Inf1.3.3.4
11.	design a basic but complete video item using a video processing software.	3	Inf1.3.3.5
12.	produce a complete video item using a video processing software to meet a given requirement.	4	Inf1.3.4.3
13.	save required media files.	2	Inf1.3.2.5

Strand 2: Website Development

Major Learning Outcome (Inf2):

Students are able to demonstrate knowledge application and critical evaluation of the key concepts of web development, the use of web driven databases, network devices, and the use of data analytical and processing tools.

Sub-strand 2.1: Web Design (EA)

Key Learning Outcome (Inf2.1):

Students are able to demonstrate knowledge application and critical evaluation of web design concepts and website development with media objects.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	describe the principles of good website design.	2	Inf2.1.2.1
2.	explain the importance of using the principles of good website design.	3	Inf2.1.3.1
3.	discuss the importance of key web design requirements for an organisation using examples.	4	Inf2.1.4.1
4.	explain the advantages of using Cascading Style Sheets (CSS) in developing websites.	3	Inf2.1.3.2
5.	outline multiple web-pages presenting some text and graphics objects using Hypertext Markup Language (HTML) codes.	2	Inf2.1.2.2
6.	create multiple web-pages that are linked using HTML codes with correct hyperlinks to media files [graphics, audio & video] to meet specific requirements.	4	Inf2.1.4.2
7.	outline a CSS file that correctly controls the style of a website.	2	Inf2.1.2.3
8.	produce a web-page using a web browser to present the expected output.	3	Inf2.1.3.3
9.	test the entire website and all hyperlinks using a web browser.	2	Inf2.1.2.4
10.	explain the importance of maintaining web presence in the information age.	3	Inf2.1.3.4
11.	describe the steps involved in the validation process of websites.	2	Inf2.1.2.5
12.	validate a created website [both HTML and CSS].	4	Inf2.1.4.3

Sub-strand 2.2: Database Driven Website (EA)

Key Learning Outcome (Inf2.2):

Students are able to demonstrate knowledge application and critical evaluation of the process of developing a database-driven website using available cross-platform web developing tools.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	explain the key benefits of using a database-driven website for an organisation.	3	Inf2.2.3.1
2.	evaluate the visible benefits within an organisation that is using a database-driven website.	4	Inf2.2.4.1
3.	outline the required components in developing a database-driven website.	2	Inf2.2.2.1
4.	describe the database-driven website concept .	2	Inf2.2.2.2
5.	discuss a proposal to assist an organisation in implementing a successful database driven website to help increase sales.	4	Inf2.2.4.2
6.	create a single table with multiple columns database that is used in conjunction with a web interface.	3	Inf2.2.3.2
7.	create a single table with multiple columns database that is used in conjunction with a created web interface to meet specific requirements.	4	Inf2.2.4.3
8.	outline the process involved in testing a web-driven database .	2	Inf2.2.2.3
9.	test the web-driven database if it is returning all expected information to the website.	2	Inf2.2.2.4



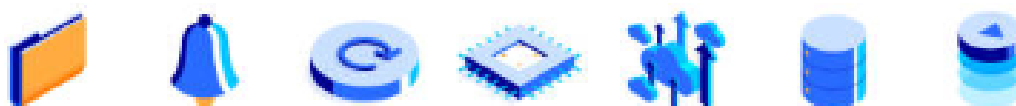
**Sub-strand 2.3: Managing Information and ICT Infrastructure (Hardware and Software)
(IA and EA)**

Key Learning Outcome (Inf2.3):

Students are able to demonstrate knowledge application and critical evaluation of the relationship between choices of devices, networking, and data processing tools in order to accomplish a project or access online resources.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	list the types of network devices (hub, switch, router, bridge, gateway, modem, repeater, access point).	2	Inf2.3.2.1
2.	outline the advantages of computers connected to network in any organisation.	2	Inf2.3.2.2
3.	explain the difference between a bridge and a router in relation to network connectivity.	3	Inf2.3.3.1
4.	explain the difference between data communication and computer networking.	3	Inf2.3.3.2
5.	state the most common type of data transmission within a context.	1	Inf2.3.1.1
6.	describe the Synchronous/Asynchronous transmission of data.	2	Inf2.3.2.3
7.	explain the difference between Wireless Fidelity (Wi-Fi) and Worldwide Interoperability for Microwave Access (WiMax) in relation to the coverage range.	3	Inf2.3.3.3
8.	describe the packetisation process in data transmission concept.	2	Inf2.3.2.4
9.	outline the advantages of having a wireless communication system in an organisation.	2	Inf2.3.2.5
10.	explain the importance of data connectivity in society.	3	Inf2.3.3.4
11.	recommend to an Internet Service Provider (ISP) a solution in assisting communities to implement a sustainable data communication system to improve their livelihood.	4	Inf2.3.4.1
12.	describe the physical communication channels (twisted pair cables, coaxial cable, fiber-optic cable, wireless mediums – Bluetooth, Wi-Fi, Wi-Max, microwave, satellite).	2	Inf2.3.2.6
13.	describe the characteristics of wireless communication channels.	2	Inf2.3.2.7
14.	outline the advantages/disadvantages of wireless communication channels to users.	2	Inf2.3.2.8
15.	discuss the importance of communication satellite to society using examples.	4	Inf2.3.4.2



16.	describe the features of connection services including dial up, DSL, Cable, satellite, and cellular.	2	Inf2.3.2.9
17.	describe the data transmission methods and modes of transmitting data (asynchronous, synchronous, simplex, half duplex, full duplex).	2	Inf2.3.2.10
18.	describe the features of common network devices (network interface card, operating system, client, server, host, switch, router, bridge).	2	Inf2.3.2.11
19.	identify the different types of network (LAN, WLAN, MAN, PAN, WAN) within a given context.	1	Inf2.3.1.2
20.	describe the basic requirements for setting up a network in an organisation.	2	Inf2.3.2.12
21.	discuss a proposal on the importance of setting up a Local Area Network (LAN)/Metropolitan Area Network (MAN)/Wide Area Network (WAN) and how it can contribute to improving communication and interactions in an organisation/certain location.	4	Inf2.3.4.3
22.	distinguish between LAN and WAN in terms of data transmission within an area.	3	Inf2.3.3.5
23.	discuss network architecture including topologies and strategies (Bus, ring, star, tree, hybrid, mesh, terminal server network, client/server, peer-to-peer (P2P), distributed processing).	4	Inf2.3.4.4
24.	outline the advantages of the bus topology network in detail.	2	Inf2.3.2.13
25.	describe how data is transmitted and stored on Ring/Star/Tree/Hybrid/Mesh topology networks.	2	Inf2.3.2.14
26.	describe the main characteristics of the Ring topology network.	2	Inf2.3.2.15
27.	evaluate the benefits of Client/server/Peer to Peer (P2P)/Distributed processing strategy networks and how these systems work.	4	Inf2.3.4.5
28.	describe the characteristics of common network environments such as internet/intranet/extranet.	2	Inf2.3.2.16
29.	explain the purpose of common network environments such as internet/intranet/extranet.	3	Inf2.3.3.6
30.	evaluate network security (proxy server, firewall, intrusion detection system, virtual private network).	4	Inf2.3.4.6
31.	describe the main data processing methods (3).	2	Inf2.3.2.17
32.	give examples of processing tools within a given context.	1	Inf2.3.1.3
33.	identify a data analytical software on the internet.	1	Inf2.3.1.4
34.	download data analysis in Excel (Load the Analysis ToolPak in Excel – Microsoft Support).	1	Inf2.3.1.5
35.	install a data analytical application.	2	Inf2.3.2.18
36.	activate the data Analysis option with relevant add-in features.	2	Inf2.3.2.19



37.	evaluate the worksheet using the worksheet required functions in analysing.	4	Inf2.3.4.7
38.	describe the facilities and service model of data center (data center facilities & services) in a given statement.	2	Inf2.3.2.20
39.	explain how data is stored in the data center in cloud computing (data center in cloud)/virtual data center.	3	Inf2.3.3.7
40.	discuss the different Tiers of Data Centre (data centers tiers 1,2,3 & 4) based on their facilities and service models.	4	Inf2.3.4.8
41.	explain the benefits of cloud services for a telecommunication company.	3	Inf2.3.3.8
42.	describe the disadvantages of data ownership for cloud storage services.	2	Inf2.3.2.21
43.	evaluate the usefulness/effectiveness of the six common cloud storage services (Google drive, sky drive, drop box, iCloud, Spider oak, Amazon cloud drive) based on data storage and security.	4	Inf2.3.4.9
44.	discuss effective ways of managing data using cloud storage services.	4	Inf2.3.4.10
45.	distinguish between iCloud and Google Drive services in terms of data storage.	3	Inf2.3.3.9
46.	differentiate between public, private or hybrid clouds (public clouds, private clouds, hybrid cloud).	3	Inf2.3.3.10



Strand 3: Programming

Major Learning Outcome (Inf3):

Students are able to demonstrate knowledge application and critical evaluation of programming concepts through the use of appropriate programming languages.

Sub-strand 3.1: Problem-Solving (IA and EA)

Key Learning Outcome (Inf3.1):

Students are able to demonstrate knowledge application and critical evaluation of the problem-solving process in preparing for a programming project.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	describe the problem-solving process.	2	Inf3.1.2.1
2.	evaluate the benefits of using problem-solving and decision-making in the workplace using examples.	4	Inf3.1.4.1
3.	identify a problem that requires a computer program solution.	1	Inf3.1.1.1
4.	state a benefit of the top-down/bottom-up approach.	1	Inf3.1.1.2
5.	evaluate the use of the top-down/bottom up approach and its advantages /disadvantages in information society.	4	Inf3.1.4.2
6.	discuss the effectiveness of the top-down/bottom up design tools in programming using examples.	4	Inf3.1.4.3
7.	describe the five execution steps in programming.	2	Inf3.1.2.2
8.	distinguish between assemble language and machine language as used in computer programming.	3	Inf3.1.3.1
9.	explain the advantages of using high level language over low level language.	3	Inf3.1.3.2

Sub-strand 3.2: Stages of Programming (IA and EA)

Key Learning Outcome (Inf3.2):

Students are able to demonstrate knowledge application and critical evaluation of constructing a solution to a specific problem using design tools and the stages of programming.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	state an example of a programming language within a context.	1	Inf3.2.1.1
2.	identify an example of a pseudocode design rule within a context.	1	Inf3.2.1.2



3.	identify a type of logic structure within a context.	1	Inf3.2.1.3
4.	identify a flowchart design tool within a context.	1	Inf3.2.1.4
5.	list the types of logic structures.	2	Inf3.2.2.1
6.	write pseudocode to present the solution to a problem using proper statements and conventions.	2	Inf3.2.2.2
7.	write a statement that can be part of an algorithm to solve a given problem.	1	Inf3.2.1.5
8.	write a complete algorithm to present the solution to a problem.	3	Inf3.2.3.1
9.	use a flowchart to present the flow of the solution to a problem.	3	Inf3.2.3.2
10.	produce a document that correctly presents the logic of the solution using either an algorithm or flowchart and acceptable conventions.	4	Inf3.2.4.1
11.	list examples of pseudocode keywords.	2	Inf3.2.2.3
12.	state a known advantage of using a flowchart within a context.	1	Inf3.2.1.6
13.	describe the features of a type of logic structure.	2	Inf3.2.2.4
14.	explain the advantages of using flowcharts/logic structures in programming.	3	Inf3.2.3.3
15.	list the major stages of programming [6 stages].	2	Inf3.2.2.5
16.	explain the benefits of using the stages of programming.	3	Inf3.2.3.4
17.	discuss the benefits of using the different stages and their paradigms in programming using examples.	4	Inf3.2.4.2

Sub-strand 3.3: Coding (IA and EA)

Key Learning Outcome (Inf3.3):

Students are able to demonstrate knowledge application and critical evaluation of coding by constructing a solution to an identified problem using a programming language and following established coding practices.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	declare appropriate variables.	2	Inf3.3.2.1
2.	use modular coding practices correctly.	2	Inf3.3.2.2
3.	list the basic programming errors [syntax, logic, semantic].	2	Inf3.3.2.3
4.	write detailed comments in the code to clarify the purpose of a piece of code.	2	Inf3.3.2.4
5.	debug a simple program using a debugging tool and make the necessary corrections.	2	Inf3.3.2.5
6.	produce a program solution with all the required coding elements using a programming tool.	4	Inf3.3.4.1
7.	test the program using systematic testing for expected output.	2	Inf3.3.2.6
8.	produce a required program solution following the modular coding concepts.	4	Inf3.3.4.2



9.	identify a part of the testing process within a context.	1	Inf3.3.1.1
10.	evaluate the benefits of program testing using examples.	4	Inf3.3.4.3
11.	evaluate the benefits of using design tools for designing programs. [Visio, Lucid Chart].	4	Inf3.3.4.4
12.	outline the steps involved in converting source code into program.	2	Inf3.3.2.7
13.	distinguish between programming and coding.	3	Inf3.3.3.1
14.	explain the required process for source code translation to machine instructions (interpreter, compiler).	3	Inf3.3.3.2
15.	outline the steps of program execution or execution flow for Python/ Java/ C++ program.	2	Inf3.3.2.8
16.	list the built-in type that Java/Python provides.	2	Inf3.3.2.9
17.	list the fundamental data groupings that C++ provides.	2	Inf3.3.2.10
18.	discuss the advantage/disadvantages of Python/Java/C++ programming language and its paradigms using examples.	4	Inf3.3.4.5
19.	explain how using Integrated Development Environment (IDE) in programming is an advantage.	3	Inf3.3.3.3
20.	download Dev C++ IDE (an open-source IDE) from the locations given.	1	Inf3.3.1.2
21.	prepare and install Dev C++.	1	Inf3.3.1.3
22.	list the steps to perform C++ program execute.	2	Inf3.3.2.11
23.	write a complete statement using selection and repetition structures to execute the program.	3	Inf3.3.3.4



Strand 4: Microprocessor Control

Major Learning Outcome (Inf4):

Students are able to demonstrate knowledge application and critical evaluation of the principles of microprocessor control and the use of programmable microprocessors to control embedded devices.

Sub-strand 4.1: Programmable Microprocessor (EA)

Key Learning Outcome (Inf4.1):

Students are able to demonstrate knowledge application and critical evaluation of the concepts of microprocessors.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	state a core function of a microprocessor within a context.	1	Inf4.1.1.1
2.	outline the different components of a microprocessor.	2	Inf4.1.2.1
3.	state the basic function of a particular component of a microprocessor within a context.	1	Inf4.1.1.2
4.	outline the basic operation of a microprocessor in terms of input, processing, storage, and output.	2	Inf4.1.2.2
5.	explain the interaction between processing and storage in a microprocessor.	3	Inf4.1.3.1
6.	explain the interactions between the main components of a microprocessor to be able to control a digital device.	3	Inf4.1.3.2
7.	state an example of high-level/machine-level language within a given context.	1	Inf4.1.1.3
8.	outline the required process in converting high-level language to machine language.	2	Inf4.1.2.3
9.	discuss the importance of converting a program written in a high-level language to machine language in relation to the use of microprocessors.	4	Inf4.1.4.1
10.	describe the process involved when a microprocessor controls a hardware.	2	Inf4.1.2.4
11.	discuss the important role of the control functions of a microprocessor when controlling digital devices.	4	Inf4.1.4.2
12.	outline the main functions of microcontrollers.	2	Inf4.1.2.5
13.	explain the basic differences between a microprocessor and a microcontroller.	3	Inf4.1.3.3



Sub-strand 4.2: Embedded Devices (IA and EA)

Key Learning Outcome (Inf4.2)

Students are able to demonstrate knowledge application and critical evaluation of the use of programmable microprocessors to control embedded devices to perform tasks.

Specific Learning Outcomes (SLO):

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	state an example of an embedded device within a context.	1	Inf4.2.1.1
2.	state a basic feature of a programmable microprocessor within a context.	1	Inf4.2.1.2
3.	explain the positive contributions of programmable microprocessors in our lives today.	3	Inf4.2.3.1
4.	evaluate the impact of programmable microprocessors in relation to technological and economic developments in the world today.	4	Inf4.2.4.1
5.	identify a simple task within a context that a programmable microprocessor can be programmed to perform.	1	Inf4.2.1.3
6.	sketch a basic flow diagram to present the logical arrangements for setting up a programmable microprocessor to be used to control an embedded device.	2	Inf4.2.2.1
7.	design a basic high-level program to control a programmable microprocessor.	3	Inf4.2.3.2
8.	produce a high-level program for a programmable microprocessor to perform a given task.	4	Inf4.2.4.2
9.	explain the need for an error-free program for a programmable microprocessor to control a simple embedded device.	3	Inf4.2.3.3
10.	discuss the significance of error-free programs developed for programmable microprocessors to control complex embedded devices such as airplane controllers.	4	Inf4.2.4.3
11.	outline examples of output responses from a programmable microprocessor that controls an embedded device when a critical change occurs in its environment.	2	Inf4.2.2.2
12.	state a key component that can be used by an embedded device to detect a change in its physical environment.	1	Inf4.2.1.4
13.	outline the process involved in controlling an embedded device to respond when a critical change in its environment occurs.	2	Inf4.2.2.3
14.	present part of a high-level code required for a programmable microprocessor to respond when a critical change in the physical environment occurs.	3	Inf4.2.3.4
15.	discuss the interactions between a programmable microprocessor and key components within a given embedded	4	Inf4.2.4.4



	device to respond correctly to a known change in its physical environment.		
16.	evaluate the impacts of using embedded microprocessors that are programmed to operate in harsh conditions and possible life-threatening environments.	4	Inf4.2.4.5

Strand 5: Issues in ICT

Major Learning Outcome (Inf5):

Students are able to demonstrate knowledge application and critical evaluation of the major concerns with the use of ICT and important measures that can minimise the concerns or provide a level of safety and security.

Sub Strand 5.1: Ethical & Social Issues (EA)

Key Learning Outcome (Inf5.1):

Students are able to demonstrate knowledge application and critical evaluation of ethical and social issues in relation to the use of ICT.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	state an ethical concern with piracy/privacy/copyright/plagiarism/identity theft/corporate confidentiality.	1	Inf5.1.1.1
2.	describe the legislations that are used by countries to minimise ethical concerns.	2	Inf5.1.2.1
3.	evaluate the impacts of ethical issues in ICT and its paradigms in society using examples.	4	Inf5.1.4.1
4.	outline appropriate measures that can be used to minimise the effects of ethical concerns in ICT.	2	Inf5.1.2.2
5.	evaluate the effectiveness of certain measures to minimise the effects of ethical concerns in ICT using examples.	4	Inf5.1.4.2



Sub Strand 5.2: Environmental Issues (EA)

Key Learning Outcome (Inf5.2):

Students are able to demonstrate knowledge application and critical evaluation of the environmental issues relating to the increasing use of ICT.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	outline environmental concerns caused by the growing use of ICT.	2	Inf5.2.2.1
2.	explain how the growing use of ICT affects the environment.	3	Inf5.2.3.1
3.	describe the issues associated with dumping/burning of ICT waste in landfills.	2	Inf5.2.2.2
4.	discuss the challenges faced by Pacific Island countries in addressing the environmental concerns associated with ICT.	4	Inf5.2.4.1
5.	state an effect on climate change of the increasing electricity demand for ICT.	1	Inf5.2.1.1
6.	explain how an increase in electricity demand for ICT contributes to climate change.	3	Inf5.2.3.2
7.	state an option for managing ICT waste within a context.	1	Inf5.2.1.2
8.	explain the importance of proper waste management of ICT.	3	Inf5.2.3.3
9.	suggest effective ways of managing ICT waste.	4	Inf5.2.4.2
10.	outline various options for organisations to consider in addressing the heavy usage of electricity by ICT.	2	Inf5.2.2.3
11.	evaluate the effectiveness of the strategies for addressing the heavy usage of electricity by ICT.	4	Inf5.2.4.3
12.	state an effective way that technology can be used to address environmental concerns associated with ICT.	1	Inf5.2.1.3
13.	list examples of sustainable technologies.	2	Inf5.2.2.4
14.	evaluate the effectiveness of different approaches in creating a sustainable ICT industry and its paradigms.	4	Inf5.2.4.4



Sub Strand 5.3: Health Issues (IA and EA)

Key Learning Outcome (Inf5.3):

Students are able to demonstrate knowledge application and critical evaluation of health issues related to using ICT equipment.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	state a health issue directly related to using ICT equipment.	1	Inf5.3.1.1
2.	evaluate the seriousness of the health issues related to using ICT equipment to individuals.	4	Inf5.3.4.1
3.	outline the impacts of the health issues associated with the use of ICT on an organisation.	2	Inf5.3.2.1
4.	explain the importance of being aware of the health issues associated with the use of ICT.	3	Inf5.3.3.1
5.	describe the role of organisations in ensuring that health issues relating to the use of ICT are minimised.	2	Inf5.3.2.2
6.	evaluate the effects of the health issues associated with the use of ICT to an organisation and how they can be minimised.	4	Inf5.3.4.2
7.	identify safe practices when interacting with ICT within a given context.	1	Inf5.3.1.2
8.	suggest effective operating practices when interacting with ICT.	4	Inf5.3.4.3

Sub Strand 5.4: Safety and Security in ICT (IA and EA)

Key Learning Outcome (Inf5.4):

Students are able to demonstrate knowledge application and critical evaluation of safety and security practices in ICT.

Specific Learning Outcomes (SLO)

SLO #	Specific Learning Outcomes (SLO) <i>Students are able to</i>	SKILL LEVEL	SLO CODE
1.	outline growing cybersecurity concerns in ICT.	2	Inf5.4.2.1
2.	state a security threat posed by computer viruses, hackers, crackers, employees, terrorists or organised crimes.	1	Inf5.4.1.1
3.	evaluate the implications of having an online identity in a social media context using examples.	4	Inf5.4.4.1
4.	identify a type of computer/physical/cyber security within a given context.	1	Inf5.4.1.2



5.	describe the key features of a particular type of computer security.	2	Inf5.4.2.2
6.	describe the major components of cyber legislation.	2	Inf5.4.2.3
7.	evaluate the effectiveness of the cyber legislations using examples.	4	Inf5.4.4.2
8.	explain the importance of the different components of a plan to ensure computer security.	3	Inf5.4.3.1
9.	identify examples of cybercrimes in the Pacific.	1	Inf5.4.1.3
10.	evaluate the effectiveness of the strategies being implemented in the Pacific to combat cybercrimes.	4	Inf5.4.4.3
11.	discuss the security concerns associated with the protection of intellectual property/long term storage in ICT using examples.	4	Inf5.4.4.4
12.	discuss the importance of the Digital Millennium Copyright Act for reducing software piracy using examples.	4	Inf5.4.4.5
13.	identify a key component that shows an effective ICT security system.	1	Inf5.4.1.4
14.	explain the importance of the different components of an effective ICT security system.	4	Inf5.4.4.6
15.	outline the security standards in cybersecurity in the Pacific region.	2	Inf5.4.2.4
16.	discuss the importance of setting standards for cybersecurity in the Pacific using examples.	4	Inf5.4.4.7
17.	list the different types of International Organisation for Standardisation (ISO).	2	Inf5.4.2.5
18.	explain the importance of ISO standards in the business community.	3	Inf5.4.3.2



8. ASSESSMENT

The assessment of the syllabus is in two parts (external and internal assessment).

1. External assessment (EA): 60%
2. Internal assessment (IA): 40%

The principal, or principal's nominee, will certify that the syllabus requirements have been fulfilled.

8.1 External Assessment (60%)

A three-hour written paper will be administered at the end of the year to assess student achievement of learning outcomes in this syllabus. The weightings given to each topic within the examination paper will be approximately:

STRANDS	WEIGHTING
1. Digital Media	14%
2. Website Development	10%
3. Programming	9%
4. Microprocessor Control	12%
5. Issues in ICT	15%
Total	60%

Candidates may be required to apply knowledge, understanding and acquired skills to unfamiliar situations.

8.2 Internal Assessment (40%)

There are four tasks that make up the internal assessment component. They are practical components in ICT that require a demonstrated skill or a synthesised output.

PRACTICAL COMPONENT OF ICT	WEIGHTING
1. Digital Media	10%
2. Website Development	10%
3. Programming	10%
4. Microprocessor Control	10%
Total	40

8.3 Assessment Blueprint (IA and EA)

Strand	Assessment Type	SKILL LEVEL/ SCORE				Weight
		1	2	3	4	
1. Digital Media	EA					14%
	IA	-	-	2	1	10%
2. Website Development	EA					10%
	IA	2	2	-	1	10%
3. Programming	EA					9%
	IA	-	3	-	1	10%
4. Microprocessor Control	EA					12%
	IA	1	1	1	1	10%
5. Issues in ICT	EA					15%
Total items for	IA	3	6	3	4	40%
Total items for	EA	7	4	7	6	60%
Total number of items		10	10	10	10	100%
Total skill score		10	20	30	40	

8.4 Internal Assessment Tasks

8.4.1 IA Task 1 Instructions and Scoring Rubric

STRAND 1: Digital Media

Title: Media Production Project

(10%)

The project is to use media applications to produce a school promotion video. The video must include a designed graphic, a background audio with some moving pictures (a captured school video).

To successfully complete this IA task, students will:

- identify and install open-source applications from the internet that can be used to create media files (graphics, audio and video).
- use the installed media applications to open the required media files.
- use the media applications to design a graphic and an audio file that can be used to produce a short video clip. The graphic is a school picture and can be used at the beginning of the video.
- include in the video some visible activities at school that can promote the school such as students in the classrooms, sports activities, or other co-curricular activities.
- ensure that the media output has visible use of the media applications to manipulate media objects.
- save all required files with a summary report to present the media production output.
- submit the report and saved copies of the media files.

TASK 1 Scoring Rubric

(10%)

No.	SLO	SKILL LEVEL	EVIDENCE	STUDENT RESPONSE LEVEL			
				Level 1	Level 2	Level 3	Level 4
1	Inf1.1.2.4	2	Install Open Source media applications from the internet	Part of the software installed correctly	Open source media applications installed correctly		
2	Inf1.3.2.1	2	Open media files using media applications	Able to open one of the required media files using the media application correctly	All required media files opened correctly		
3	Inf1.3.3.1	3	Design a basic but complete graphics item using a graphics design software	Graphics presented but no visible proof of editing using a graphics design software	Part of a graphics task designed with some minor editing using a graphics design software	A complete graphics task designed and edited using a graphics design software	
4	Inf1.3.2.2	2	Use basic graphics design features on a graphics item	A basic feature of the graphics design software used on the designed graphic	More than one basic feature of the graphics design software used and visible on the designed graphic		
5	Inf1.3.3.3	3	Design a basic but complete audio item using an audio processing software	An audio is presented but no visible proof of using an audio processing software	Major components of an audio task designed and edited using an audio processing software	A complete audio task designed and processed using an audio processing software	
6	Inf1.3.2.3	2	Use the basic audio processing features of an audio processing software to edit an audio item	A basic feature of the audio processing software used on the designed audio	Some basic features of the audio processing software used and visible on the designed audio		

7	Inf1.3.4.3	4	Produce a complete video item using a video processing software to meet a given requirement	A video is presented but no visible proof of any editing using a video processing software	Major components of a video designed with visible editing using a video processing software	A complete video task designed with visible editing using a video processing software	A complete video task produced that meets all the requirements of using a video processing software
8	Inf1.3.2.4	2	Use the basic video processing features of a video processing software to develop a video item	A basic feature of the audio processing software used on the designed audio	More than one basic feature of the audio processing software used on the designed audio		
9	Inf1.3.2.5	2	Save required media files	One of the required media files saved	All required media files saved		

8.4.2 IA Task 2 Instructions and Scoring Rubric

STRAND 2: Website Development

Title: Data Analysis Project

(10%)

Note:

There are many specialised statistical packages such as MINITAB, SPSS, R, S-PLUS, etc are available for statistical and data analysis. MS Excel can also be used for statistical analysis. However, the students must remember that some of the calculations performed by Excel might involve errors since some algorithms are not as sophisticated as those in the specialised software packages.

Excel is a powerful tool for today's academic and business worlds, providing the user with the ability to analyse numerical data, solve problems, and visualise meaningful products. It is the most popular spreadsheet program in the world today and has the capacity to handle a wide variety of statistical applications. Students may have already had some exposure to Excel and may even have Excel on their personal computer.

In this project, students are required to install ToolPak Excel Analysis ToolPak which is an Add-Ins that contains a library of built-in functions and procedures that will be useful for elementary statistical analysis.

Steps:

Go to the Data menu and see if Data Analysis is an option. If not, then activate this Add-in feature as follows:

- 1) Click the File Button in the menu bar and then select Excel Options.
- 2) Select Add-Ins > Analysis ToolPak
- 3) Load and click Megastat
- 4) Check to see Data Analysis icon appear on Toolbar

From the following exercises, students are expected to write program solutions to perform tasks.

To successfully complete this IA task, students will

- a) create a worksheet by entering the data in excel spread sheet
- b) locate useful and right MS Excel functions
- c) show that it is working accurately
- d) document all the stages of the task. You may need to provide screen shots for the results.
- e) save the program and a report showing all the work carried out in the project;
- f) hand in the saved copy of the program for the exercises and the report

Exercise 1:

A teacher gave a test to his ICT students. The test was out of 10 and the following are the students' marks:

3, 8, 6, 5, 6, 4, 7, 6, 5, 3, 5, 6, 3, 5, 4, 4, 3, 6, 7, 8, 1, 10, 7, 6, 4, 5, 0, 7, 6, 5, 6, 7, 1, 7, 5, 4, 5, 8, 5, 7

Using the set of students' marks above, construct a frequency table.

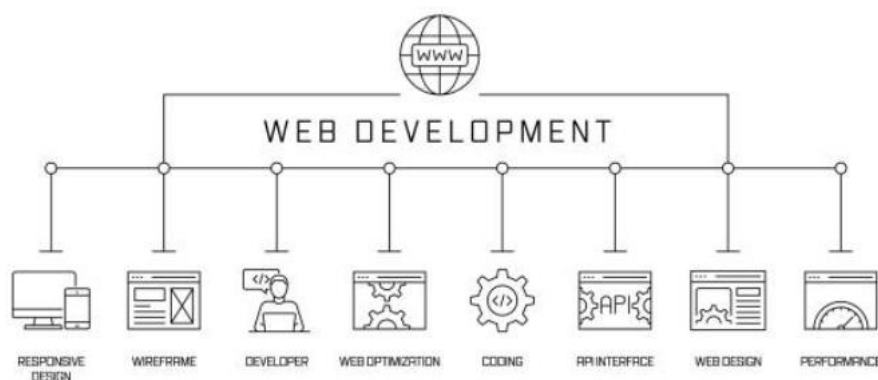
Exercise 2:

Using the same information from Exercise 1 to find the relative frequency and percentage.

Exercise 3: The following data represents the record of temperature for 50 states.

112, 110, 107, 116, 120, 100, 118, 112, 108, 113, 127, 117, 114, 110, 120, 120, 116, 115, 121, 117, 134, 118, 118, 113, 105, 118, 122, 117, 120, 110, 105, 114, 118, 119, 118, 110, 114, 122, 111, 112, 109, 105, 106, 104, 114, 112, 109, 110, 111, 114

Construct a grouped frequency distribution for the above data using 7 classes.



TASK 2 Scoring Rubric

(10%)

No.	SLO	SKILL LEVEL	EVIDENCE	STUDENT RESPONSE LEVEL			
				Level 1	Level 2	Level 3	Level 4
1	Inf2.3.1.4	1	Identify a data analytical software on the internet	A data analytical software that requires analysis identified			
2	Inf2.3.1.5	1	Download a data analytical software	A data analytical software correctly downloaded			
3	Inf2.3.2.18	2	Install a data analytical application	Part of the data analytical software installed/ Wrong steps taken to install the software	A data analytical software successfully installed		
4	Inf2.3.2.19	2	Activate Data Analysis option with relevant add-in features	Identify the data analysis option	Data analysis option with accurate features activated		
5	Inf2.3.4.7	4	Evaluate the worksheet using the worksheet required functions in analysing	A single worksheet was created with useful and right analysis function identified	A worksheet with multiple columns were created	A worksheet with multiple columns created in conjunction with required functions in analysing	A worksheet with multiple columns evaluated in conjunction with accurate functions in analysing



STRAND 3: Programming

Title: Programming Project

(10%)

Note:

C++ is a 3GL (third Generation Language) which is user-friendly and machine independent. They are designed in such a way that it favours the user rather than the computer. To efficiently develop a C++ program, you need an IDE (Integrated Development Environment) which is a software application that provides facilities such as source code editing, compilation etc. to assist software developers in efficiently developing computer programs.

In this project, students are required to use bloodshed Dev C++ IDE. It is an open-source IDE that is freely available on the web. Students can download the IDE from this website link (<https://www.bloodshed.net/Dev-Cpp-4.0>) and install Dev C++ 4 onto their computer.

From the following exercises, students are expected to write program solutions to perform tasks

To successfully complete this IA task, students will

- a) identify a problem that requires a program solution (with the help of the teacher);
- b) produce the main function of the problem with a function definition that has four elements
 - A return type
 - A function name
 - A (possibility empty) parameter list enclosed in parentheses
 - A function body
- c) express the logic of the program using a flowchart
- d) write complete C++ programs
- e) run (execute) the code to show that it is working accurately
- f) document all the stages of the task. You may need to provide screen shots for the results.
- g) save the program and a report showing all the work carried out in the project;
- h) hand in the saved copy of the program for the exercises and the report

Exercise 1:

Write a program using a selection structure that identifies if the person has passed or failed.

The user is required to enter his/her mark out of 100.

If the mark is greater than or equal to 50, the person has passed.

Exercise 2:

The cost of an international call from Fiji to New Zealand is calculated as follows:
 Connection \$1.50; \$2.00 for the first three minutes and \$0.50 for each additional minute.

Write a program that prompts the user to enter the number of minutes the call lasted and outputs the amount due.

Exercise 3:

Write a program that calculates an employee's wages by prompting the user to enter the hours worked, pay rate, calculates the wages and outputs the total wages.

TASK 3 Scoring Rubric**(10%)**

No.	SLO	SKILL LEVEL	EVIDENCE	STUDENT RESPONSE LEVEL			
				Level 1	Level 2	Level 3	Level 4
1	Inf3.1.1.1	1	Identify a problem that requires a computer program solution	A problem that requires a computer program solution identified			
3 2	Inf3.2.3.2	3	Use a flowchart to present the solution to a problem	A component of a flowchart presented	An incomplete flowchart presented	A complete flowchart showing the logic flow of the solution presented	
4 3	Inf3.3.2.1	2	Declare one appropriate variable	A single variable declared correctly in the program	Multiple variables declared correctly in the program		
5 4	Inf3.3.2.2	2	Use modular coding practices correctly	One practice followed correctly	Modular coding followed and presented correctly in the program		
6 5	Inf3.3.2.4	2	Write detailed comments in the code to clarify the purpose of a piece of code	A single comment in the code was presented	Detailed comments in the code to clarify the purpose of a piece of code presented correctly		
7 6	Inf3.3.2.5	2	Debug a simple program using a debugging tool and make the	A debugging tool used on the program	A debugging tool used on the program and the necessary		

			necessary corrections		corrections made		
87	Inf3.3.4.1	4	Produce a program solution with all the required coding elements using a programming tool	A part of the program solution provided	A program with some coding elements but does not produce the required solution	A program with all required coding elements using a programming tool produced but met only part of the required solution	A program with all required coding elements using a programming tool and the required solution
98	Inf3.3.2.6	2	Test the program using systematic testing for expected output	A form of test was applied to the program	Program was tested systematically		

8.4.4 IA Task 4 Instructions and Scoring Rubric

STRAND 4: Microprocessor Control

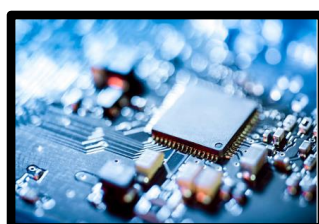
Title: Microprocessor Control Project

(10%)

Note: This task requires the use of a programmable microprocessor kit that can be purchased from electronic shops. There should be enough kits for students to use and they can work in pairs. Instructions to prepare the microprocessor is provided with the kit.

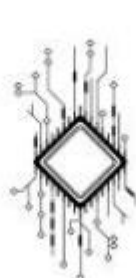
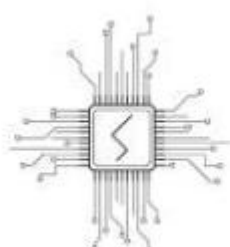
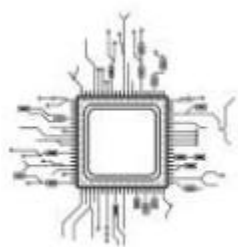
To successfully complete this IA task, students will

- use a programmable microprocessor kit to meet the requirement of the task.
- identify a basic but appropriate task that requires a programmable microprocessor to perform.
- prepare the microprocessor kit with all the required connections.
- prepare a sketch of a basic flow diagram that presents the logical arrangements to show the basic setup used for preparing the microprocessor to perform the required task.
- write the high-level program that is required to control the microprocessor to perform the required task.
- prepare and add to the program part of the code that can allow the micro-processor to respond to any critical change in its environment.
- capture the work on video for confirmation of completed task.
- hand in to the teacher the saved copy of the program, the program code and proof of a working microprocessor.



TASK 4 Scoring Rubric

No.	SLO	SKILL LEVEL	EVIDENCE	STUDENT RESPONSE LEVEL			
				Level 1	Level 2	Level 3	Level 4
1	Inf4.2.1.3	1	Identify a simple task that a programmable microprocessor can be programmed to perform.	A simple task that a programmable microprocessor can be programmed to perform correctly identified.			
2	Inf4.2.2.1	2	Sketch a basic flow diagram to present the logical arrangements for setting up a programmable microprocessor to be used to control an embedded device.	One component of a flow diagram presented.	A flow diagram showing the logical arrangements for the task presented correctly.		
3	Inf4.2.4.2	4	Produce a high-level program for a programmable microprocessor to perform a given task.	A statement of a high-level code that is part of a program for a programmable microprocessor presented	A high-level program presented but not able to control the microprocessor correctly.	A high-level program that controls a programmable microprocessor presented.	A high-level program for a programmable microprocessor to perform the given task is correctly presented.
4	Inf4.2.3.4	3	Present part of a high-level code required for a programmable microprocessor to respond when a critical change in the physical environment is occurred.	A statement of a high-level code that is part of a program to control a programmable microprocessor by responding to some physical changes provided.	Major part of the code that can be used to instruct a programmable microprocessor to respond to some physical changes is presented.	Complete code required to instruct a programmable microprocessor to respond when a critical change in the physical environment is detected is presented correctly.	



9. APPENDICES

9.1 Web-Based Resources

1. <http://csunplugged.org/> Computer Science resources which don't require a computer.
2. Free online courses – many specialist subject areas
http://ww2.openculture.com/computer_science_free_courses
3. HTML and CSS online tutorials <http://www.w3schools.com>
4. Python tutorials https://opentechschoo1.github.io/python-beginners/en/getting_started.html
5. Java tutorials <https://howtoprogramwithjava.com/programming-101-the-5-basic-concepts-of-any-programming-language/>
6. GIMP tutorials <https://www.gimp.org/tutorials/>
7. https://www.tutorialspoint.com/python/python_questions_answers.htm
8. https://www.w3schools.com/java/java_intro.asp
9. <https://kneconotes.co.ke/data-communication-and-networking-notes/>
10. https://www.tutorialspoint.com/data_communication_computer_network/index.htm
11. <https://sureshvcetit.files.wordpress.com/2019/03/networking-notes.pdf>
12. Programming Language in C++ : <https://www.bloodshed.net/Dev-Cpp-4.0>
13. C++ Introduction: https://www.w3schools.com/cpp/cpp_intro.asp

9.2 IA Program Proposal Template

Page 1 : Cover Page

The Cover Page will have the name of the:

- School
- Subject : FULL IA PROGRAM
- Teachers Name:

An Example of a Cover Page



School Logo/
Optional

Name of School

Name of Program

Subject

Teachers Name


Page 2 : IA SUMMARY FORM

The IA Summary Form must have the following:

- Number of Tasks
- Brief Description of the Tasks
- Start and End Dates
- Signature of Principal and Teacher
- School Stamp/Date

An Example of an IA Summary Form

South Pacific Form Seven Certificate



IA Summary Form
2023

ICT – IA




INFORMATION & COMMUNICATION TECHNOLOGY

Task	Brief Description of Tasks	Start Date	End Date	Date to EQAP	Weighting
1. Digital Media	The Project is to use media applications to produce a school video.	13/04	17/04		10%
2. Website Development	In this project, students enter data in an Excel spreadsheet to analyse data.	29/06	06/07		10%
3. Programming	In this task, students will identify a problem, and use Dev C++ IDE document stages	14/08	21/08		10%
4. Microprocessor Ctrl	This task, students will work in pairs to write a high-level program for a microprocessor	21/09	22/09		10%
TOTAL					40%

Note:

1. Be specific about dates, not just Week 3 Term 1, etc.
2. Assessment Schedules/Scoring Rubrics for the tasks will be provided by EQAP. Teachers must use these when creating students' work

Verification and Endorsement of IA Program

Principal's Name	Teachers Name	School Stamp
Mr. Ulisesse KAINANO	Mr. Maikali TUVOLI	
Signature 	Signature 	
Date: 23/05/2022	Date: 23/05/2022	

A full IA program is to be submitted together with this IA Summary Form.

Number of Tasks & Brief Description of Each Task

Shows START date; END date; Date due to EQAP

Weighting for each Task

Signed by Principal

Approved by SPFSC Coordinator

Signed by the Teacher

Verified by School Stamp

Pages 3-6:

1 **Task Title: Task 1:** _____

The title should be brief and include a reference to the particular syllabus topic or skill which is being assessed by the task.

Example: “*Research Topic – Investigation of a Social Issue.*”

2 **Learning Outcomes: List the Specific Learning Outcomes (SLOs) to be assessed by the task**

These are found in the syllabus and need to be identified before the tasks are constructed.

Example: *Describe a feature of*

(Copy and paste directly from the syllabus: it must show strand, sub strand and SLOs)

3. **Assessment/Task:**

Describe the task as a form of assessment to measure student achievements of the above learning outcomes at different stages of the lesson/task implementation.

(Think of what are the best types of assessment for the above LOs so that your students can demonstrate they have achieved the learning outcomes. Also include how you will pre-assess their knowledge at the beginning of the lesson and how you will continuously assess them throughout the strand/topic to monitor their learning progress. The summative assessments are the final IA tasks.)

e.g. Diagnostic: *(can be oral questions/short tests/ surveys/questionnaires to find out what students already know before the lesson)*

Formative: *1. This is the formative use of the summative assessment such as the drafts submitted, self-assessment, peer assessment, teacher assessment of the drafts and specific feedback provided to improve the task. 2. For CATs – this can be similar items prepared by teachers using the SLOs and given to students for practice. After scoring, the feedback needs to be given to improve learning. If majority students not doing well then re-teach using another strategy, assess and monitor learning.*

Summative: *(these are the final IA tasks or the CATs to measure how much the students have learnt/achieved after the learning period)*

4 **Resources: List materials required for completing the task (for learning & demonstrating the achievement for the SLOs.**

This must specify any material items such as books, documents, maps, stimulus material, equipment required by the task, including use of technology.

5 **Guidelines for the teacher on advance preparation requirements**

- a) time required by the student for task completion (monitoring progress)
- b) recommended dates/date range for task completion
- c) organisation of room and hardware to facilitate task completion (learning assessment).

(After the task has been completed and scored, teachers will need an IA score capture sheet to record the performance of all students in the class.)

6 Guidelines for the teacher on task completion and task control

This must specify:

- the role of the teacher during the period of task completion
- instructions that are to be given by the teacher to the students
- actions that are required of the teacher during task completion

7 Preparation by the students beforehand

If students are required to prepare in advance of the task date, preparatory notes must indicate the requirements. For example, students may need to collect support materials for a task that is supervised in a classroom.

8 Task outline for the student

This outline is a brief description of the task that the student is to complete. It is a general description without specific detail.

Example: *Your task is to focus on an important social issue. After investigating that issue, you need to process information collected and suggest possible courses of action that authorities could take.*

9 Task detail for the student

This must provide a detailed description of the task in the sequence that the student would be expected to follow during task completion. This must clearly state:

- what the student is expected to do
- what the student is expected to record and present for assessment.

10 Feedback & Support

Allocate time for:

- i. Student's self-assessment and correction
- ii. Peer assessment, feedback, and time for improvement
- iii. Teacher assessment, feedback, and time for time improvement

(NB: State how this will be carried out)

11 Final submission and scoring

State when the final task is due and how it will be assessed. State how the school (HOD/SPFSC Coordinator) will monitor the scoring of the tasks.

12 Scoring Rubric

Copy and paste the relevant scoring rubrics directly from the syllabus.

13 Assessment score capture sheet for the task

This will be provided by EQAP

(Repeat 1-13 for other tasks)

9.3 IA Summary Form



South Pacific Form Seven Certificate

IA Summary Form
2023

ICT – IA

INFORMATION & COMMUNICATION TECHNOLOGY

COUNTRY					
SCHOOL					
Task	Brief Description of Tasks	Start Date	End Date	Date to EQAP	Weighting
1. Digital Media					10%
2. Website Development					10%
3. Programming					10%
4. Microprocessor Ctrl					10%
TOTAL					40%

- Note:**
1. Be specific about dates, not just Week 3 Term 1, etc.
 2. Assessment Schedules/Scoring Rubrics for the tasks will be provided by EQAP. Teachers must use these when scoring students' work.
 3. All IA Score Capture Sheets will be provided by EQAP to schools.

Verification and Endorsement of IA Program		
Principal's Name	Teachers Name	School Stamp
Signature	Signature	
Date	Date	

A full IA program is to be submitted together with this IA Summary Form.