Information and Communication Technology 2019 v1.0

Applied Senior Syllabus

This syllabus is for implementation with Year 11 students in 2019.

Queensland Government | Queensland Curriculum & Assessment Authority

For all Queensland schools

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Contents

1 Course overview

1.1 Introduction

1.1.1 Rationale

The subject Information and Communication Technology (ICT) focuses on the knowledge, understanding and skills related to engagement with information and communication technology through a variety of elective contexts derived from work, study and leisure environments of today.[1]

These environments continue to be transformed by the increasing evolution and impact of ICT. This is a highly dynamic field, subject to unpredictable transformations by emerging technology and requiring constant adaptation by those who engage with it directly, or by those whose lives and communities are affected by its innovations.

Across business, industry, government, education and leisure sectors, rapidly changing ICT practices and protocols create corresponding vocational opportunities. To enable students to take advantage of these opportunities, this subject area will equip them with knowledge of current and emerging hardware and software combinations, an understanding of how to apply them in real-world contexts and the skills to use them to solve technical and/or creative problems. Students will develop knowledge, understanding and skills across multiple platforms and operating systems, and will be ethical and responsible users and advocates of ICT, aware of the social, environmental and legal impacts of their actions.

The subject Information and Communication Technology is concerned with skills in applying knowledge of ICT to produce solutions to simulated problems referenced to business, industry, government, education and leisure contexts. Through practice in problem-solving in a variety of contexts, both individually and collaboratively, it promotes adaptable, competent and self-motivated users and consumers of ICT who can work with clients and colleagues to identify issues and solve problems.

To achieve this, the subject includes core knowledge, understanding and skills relating to hardware, software and ICT in society. The core is explored through elective contexts that provide the flexibility needed to accommodate new technology, and the wide range of interests and abilities of the students who study it.

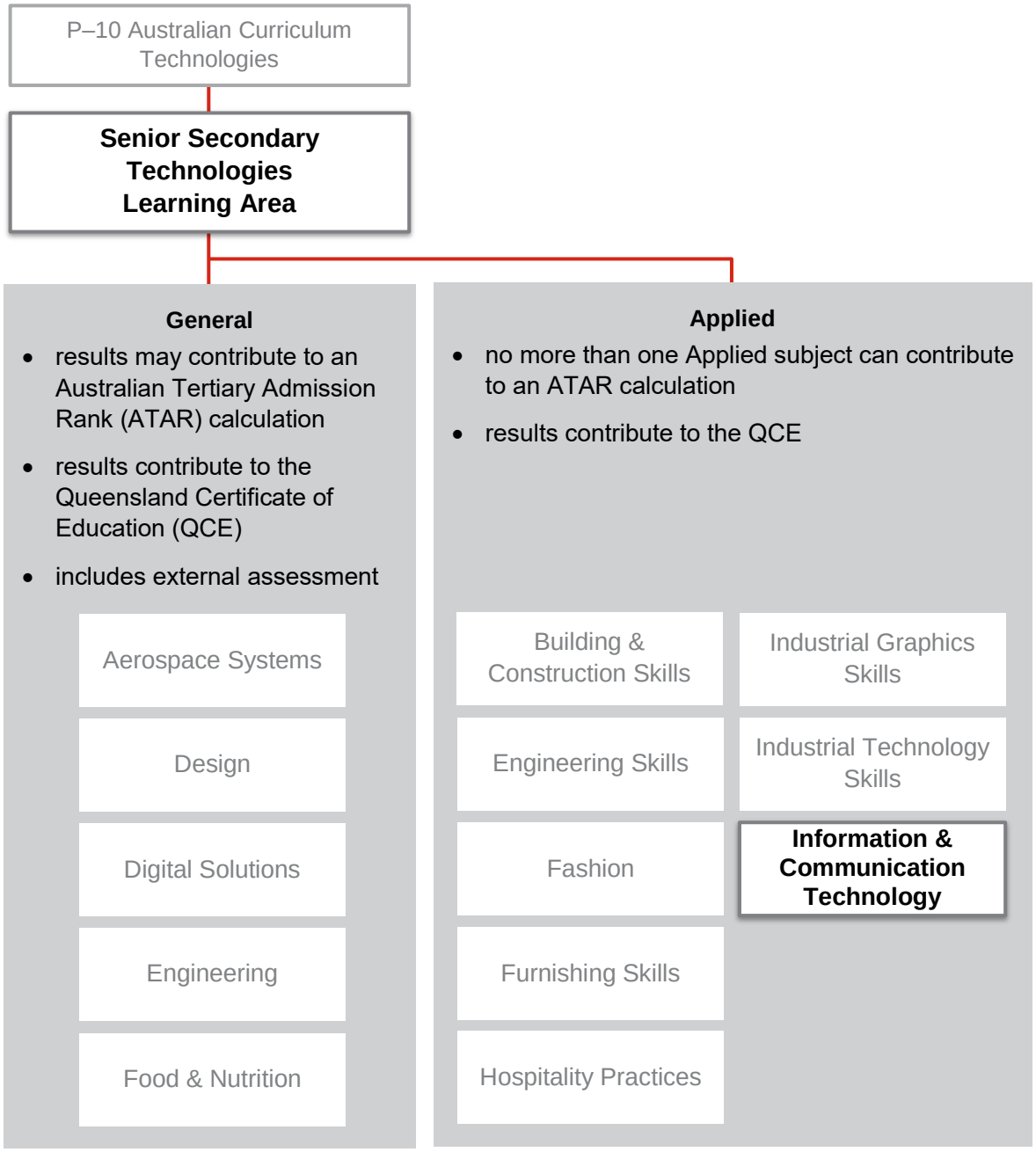
Pathways

A course of study in Information and Communication Technology can establish a basis for further education and employment in many fields especially the fields of ICT operations, help desk, sales support, digital media support, office administration, records and data management, and call centres.

[1] This syllabus makes reference to the Australian Curriculum: Information and Communication Technology (ICT) capability and builds on the organising elements that describe this general capability: www.australiancurriculum.edu.au/GeneralCapabilities/information-and-communication-technology-capability/introduction/introduction.

1.1.2 Learning area structure

Figure 1: Summary of subjects offered in the Technologies learning area



1.2 Teaching and learning

1.2.1 Dimensions and objectives

The dimensions are the salient properties or characteristics of distinctive learning for this subject. The objectives describe what students should know and be able to do by the end of the course of study.

Progress in a particular dimension may depend on the knowledge, understanding and skills developed in other dimensions. Learning through each of the dimensions increases in complexity to allow for greater independence for learners over a four-unit course of study.

The standards have a direct relationship with the objectives, and are described in the same dimensions as the objectives. Schools assess how well students have achieved all of the objectives using the standards.

The dimensions for a course of study in this subject are:

- Dimension 1: Knowing and understanding
- Dimension 2: Analysing and applying
- Dimension 3: Producing and evaluating.

Dimension 1: Knowing and understanding

Knowing and understanding refers to students being familiar with the concepts and ideas, knowledge, understanding and skills used in solving ICT problems within ICT contexts. They achieve this knowledge and understanding by retrieving relevant knowledge from memory and by constructing meaning from instructional messages, through recognising, interpreting, explaining and demonstrating.

Objectives

By the conclusion of the course of study, students should:

- identify and explain hardware and software requirements related to ICT problems
- identify and explain the use of ICT in society.

When students identify hardware and software requirements, they recognise and establish what these requirements are by using learnt information and relating it to the presentation of ICT problems. ICT problems are matters or issues to be solved, or tasks where the students do not initially know which procedures to use to solve the problems. ICT problems could be established and framed within scenarios, client briefs, issues to examine, or tasks. ICT problems will identify a set of criteria for success. When students explain software and hardware requirements, they present meaning clearly and provide additional information that demonstrates understanding of application in relation to ICT problems.

Computer hardware refers to the physical parts or components of a computer such as the monitor, mouse, keyboard, computer data storage, hard drive disk (HDD), system component (graphic cards, sound cards, memory, motherboard and chips), all of which are physical objects that can be touched. Computer software is any set of machine-readable instructions that directs a computer's processor to perform specific operations. These instructions can be stored and run by hardware. A combination of hardware and software forms a usable computing system. Computer hardware and software require each other and neither can be realistically used without the other. An explanation of software and hardware requirements is enhanced by the use of examples.

When students identify the use of ICT in society within ICT contexts, they recognise and establish what these concepts and ideas are by using learnt information and relating it to presented information. ICT in society comprises the concepts and ideas of health and safety when working with computers, ethical use, security and safety of the ICT user and how society is affected by the use of past, new and emerging ICT. When students explain ICT in society, they present meaning clearly and provide additional information that demonstrates understanding of application. An explanation of ICT in society is enhanced by the use of examples.

Dimension 2: Analysing and applying

Analysing and applying refers to the analysis of ICT problems and the selection, application and organisation of knowledge, understanding and skills in ICT contexts to carry out and complete tasks. When students analyse and apply, they draw on their learning in Knowing and understanding.

Objectives

By the conclusion of the course of study, students should:

- analyse ICT problems to identify solutions
- communicate ICT information to audiences using visual representations and language conventions and features
- apply software and hardware concepts, ideas and skills to complete tasks in ICT contexts.

When students analyse ICT problems, they dissect information relating to the criteria, scenario, client brief, issue and/or task criteria to ascertain and examine the constituent parts and/or their relationships. When students identify solutions, they consider a number of possible solutions that might solve the ICT problems.

When students communicate, they convey knowledge and/or understanding to others. When students use visual representations they employ the visual representations of information and ideas used in ICT contexts, (symbols, diagrams, graphs, storyboards and flow charts) suited to purpose (responding to criteria) to convey ideas and information to audiences. When students use language conventions and features, they use correct grammar, spelling, punctuation, vocabulary, text types and structures in written, oral and visual communication modes.

When students apply concepts, ideas and skills, they use software, hardware and ICT concepts, ideas and skills to complete tasks in ICT contexts. Examples of tasks could include applying digital information security practices, managing files using cloud-based storage, applying personal security protocols or formatting a document to design specifications.

Dimension 3: Producing and evaluating

Producing refers to utilising ICT to carry out a plan for solving given ICT problems that meet certain specifications. Evaluating refers to the reflection on the students' problem-solving process and solutions to consider ways to improve future responses to ICT problems. When students produce and evaluate, they draw on their learning in Knowing and understanding and Analysing and applying.

Objectives

By the conclusion of the course of study, students should:

- synthesise ICT concepts and ideas to plan solutions to given ICT problems
- produce solutions that address ICT problems

- evaluate problem-solving processes and solutions, and make recommendations.

When students synthesise ICT concepts and ideas, they make decisions about how to assemble the constituent parts to given ICT problems in order to plan solutions. When students plan solutions, they develop approaches that meet the problems' criteria. Criteria could be developed by teachers or students. Examples of criteria include meeting a client brief, specific needs, identified purpose, product quality or effectiveness of solutions.

When students produce solutions, they carry out plans for addressing given ICT problems and produce solutions that best fit the problems.

When students evaluate problem-solving processes and solutions, they test and check for effectiveness, usability, functionality and suitability for the intended purpose and assign merit according to criteria. When students make recommendations, they consider and suggest improvements and/or alternatives to improve the methodologies, solutions and outcomes of problem-solving processes and plans.

1.2.2 Underpinning factors

There are five factors that underpin and are essential for defining the distinctive nature of Applied syllabuses:

- applied learning
- community connections
- core skills for work (CSfW)
- literacy
- numeracy.

These factors, build on the general capabilities found in the P–10 Australian Curriculum. They overlap and interact, are derived from current education, industry and community expectations, and inform and shape Information and Communication Technology.

All Applied syllabuses cover all of the underpinning factors in some way, though coverage may vary from syllabus to syllabus. Students should be provided with a variety of opportunities to learn through and about the five underpinning factors across the four-unit course of study.

Applied learning and community connections emphasise the importance of applying learning in workplace and community situations. Applied learning is an approach to contextualised learning; community connections provide contexts for learning, acquiring and applying knowledge, understanding and skills. Core skills for work, literacy and numeracy, however, contain identifiable knowledge and skills which can be directly assessed. The relevant knowledge and skills for these three factors are contained in the course dimensions and objectives for Information and Communication Technology.

Applied learning

Applied learning is the acquisition and application of knowledge, understanding and skills in real-world or lifelike contexts. Contexts should be authentic and may encompass work place, industry and community situations.

Applied learning values knowledge — including subject knowledge, skills, techniques and procedures — and emphasises learning through doing. It includes both theory and the application of theory, connecting subject knowledge and understanding with the development of practical skills.

Applied learning:

- links theory and practice

- integrates knowledge and skills in real-world and/or lifelike contexts
- encourages students to work individually and in teams to complete tasks and solve problems
- enables students to develop new learnings and transfer their knowledge, understanding and skills to a range of contexts
- uses assessment that is authentic and reflects the content and contexts.

Community connections

Community connections build students' awareness and understanding of life beyond school through authentic, real-world interactions. This understanding supports transition from school to participation in, and contribution to, community, industry, work and not-for-profit organisations (NFPOs). 'Community' includes the school community and the wider community beyond the school, including virtual communities.

Valuing a sense of community encourages responsible citizenship. Connecting with community seeks to deepen students' knowledge and understanding of the world around them and provide them with the knowledge, understanding, skills and dispositions relevant to community, industry and workplace contexts. It is through these interactions that students develop as active and informed citizens.

Schools plan connections with community as part of their teaching and learning programs to connect classroom experience with the world outside the classroom. It is a mutual or reciprocal arrangement encompassing access to relevant experience and expertise. The learning can be based in community settings, including workplaces, and/or in the school setting, including the classroom.

Community connections can occur through formal arrangements or more informal interactions. Opportunities for community connections include:

- visiting a business or community organisation or agency
- organising an event for the school or local community
- working with community groups in a range of activities
- providing a service for the local community
- attending industry expos and career 'taster' days
- participating in mentoring programs and work shadowing
- gaining work experience in industry
- participating in community service projects or engaging in service learning
- interacting with visitors to the school, such as community representatives, industry experts, employers, employees and the self-employed
- internet, phone or video conferencing with other school communities.

Core skills for work (CSfW)

In August 2013, the Australian Government released the *Core Skills for Work Developmental Framework (CSfW)*.[2] The *CSfW* describes a set of knowledge, understanding and non-technical skills that underpin successful participation in work.[3] These skills are often referred to as generic

[2] More information about the *Core Skills for Work Developmental Framework* is available at https://docs.education.gov.au/node/37095

[3] The term 'work' is used in the broadest sense: activity that is directed at a specific purpose, which may or may not be for remuneration or gain.

or employability skills. They contribute to work performance in combination with technical skills, discipline-specific skills, and core language, literacy and numeracy skills.

The *CSfW* describes performance in ten skill areas grouped under three skill clusters, shown in the table overleaf. These skills can be embedded, taught and assessed across Information and Communication Technology.

Relevant aspects of core skills for work are assessed, as described in the standards.

Table 1: Core skills for work skill clusters and skill areas

	Skill cluster 1: Navigate the world of work	Skill cluster 2: Interacting with others	Skill cluster 3: Getting the work done
Skill areas	• Manage career and work life • Work with roles, rights and protocols	• Communicate for work • Connect and work with others • Recognise and utilise diverse perspectives	• Plan and organise • Make decisions • Identify and solve problems • Create and innovate • Work in a digital world

Literacy in Information and Communication Technology

The information and ideas that make up the Information and Communication Technology (ICT) are communicated in language and texts. Literacy is the set of knowledge and skills about language and texts that is essential for understanding and conveying this content.

Each Applied syllabus has its own specific content and ways to convey and present this content. Ongoing systematic teaching and learning focused on the literacy knowledge and skills specific to Information and Communication Technology is essential for student achievement.

Students need to learn and use knowledge and skills of reading, viewing and listening to understand and learn the content of Information and Communication Technology. Students need to learn and use the knowledge and skills of writing, composing and speaking to convey the Information and Communication Technology content they have learnt.

In teaching and learning in Information and Communication Technology, students learn a variety of strategies to understand, use, analyse and evaluate ideas and information conveyed in language and texts.

To understand and use Information and Communication Technology content, teaching and learning strategies include:

- breaking the language code to make meaning of Information and Communication Technology language and texts
- comprehending language and texts to make literal and inferred meanings about Information and Communication Technology content
- using Information and Communication Technology ideas and information in classroom, real-world and/or lifelike contexts to progress their own learning.

To analyse and evaluate Information and Communication Technology content, teaching and learning strategies include:

- making conclusions about the purpose and audience of Information and Communication Technology language and texts
- analysing the ways language is used to convey ideas and information in Information and Communication Technology texts

- transforming language and texts to convey Information and Communication Technology ideas and information in particular ways to suit audience and purpose.

Relevant aspects of literacy knowledge and skills are assessed, as described in the standards.

Numeracy in Information and Communication Technology

Numeracy is about using mathematics to make sense of the world and applying mathematics in a context for a social purpose.

Numeracy encompasses the knowledge, skills, behaviours and dispositions that students need to use mathematics in a wide range of situations. Numeracy involves students recognising and understanding the role of mathematics in the world and having the dispositions and capacities to use mathematical knowledge and skills purposefully.[4]

Although much of the explicit teaching of numeracy skills occurs in Mathematics, being numerate involves using mathematical skills across the curriculum. Therefore, a commitment to numeracy development is an essential component of teaching and learning across the curriculum and a responsibility for all teachers.

To understand and use Information and Communication Technology content, teaching and learning strategies include:

- identifying the specific mathematical information in their learning area
- providing learning experiences and opportunities that support the application of students' general mathematical knowledge and problem-solving processes
- communicating and representing the language of numeracy in teaching, as appropriate.

Relevant aspects of numeracy knowledge and skills are assessed, as described in the standards.

A subject-specific support resource for numeracy is available on the Information and Communication Technology Teaching & learning tab: www.qcaa.qld.edu.au/30490-teaching.html.

1.2.3 Planning a course of study

Information and Communication Technology is a four-unit course of study.

Units 1 and 2 of the course are designed to allow students to begin their engagement with the course content, i.e. the knowledge, understanding and skills of the subject. Course content, learning experiences and assessment increase in complexity across the four units as students develop greater independence as learners.

Units 3 and 4 consolidate student learning.

The minimum number of hours of timetabled school time, including assessment, for a course of study developed from this Applied syllabus is 55 hours per unit. A course of study will usually be completed over four units (220 hours).

A course of study for Information and Communication Technology (ICT) includes:

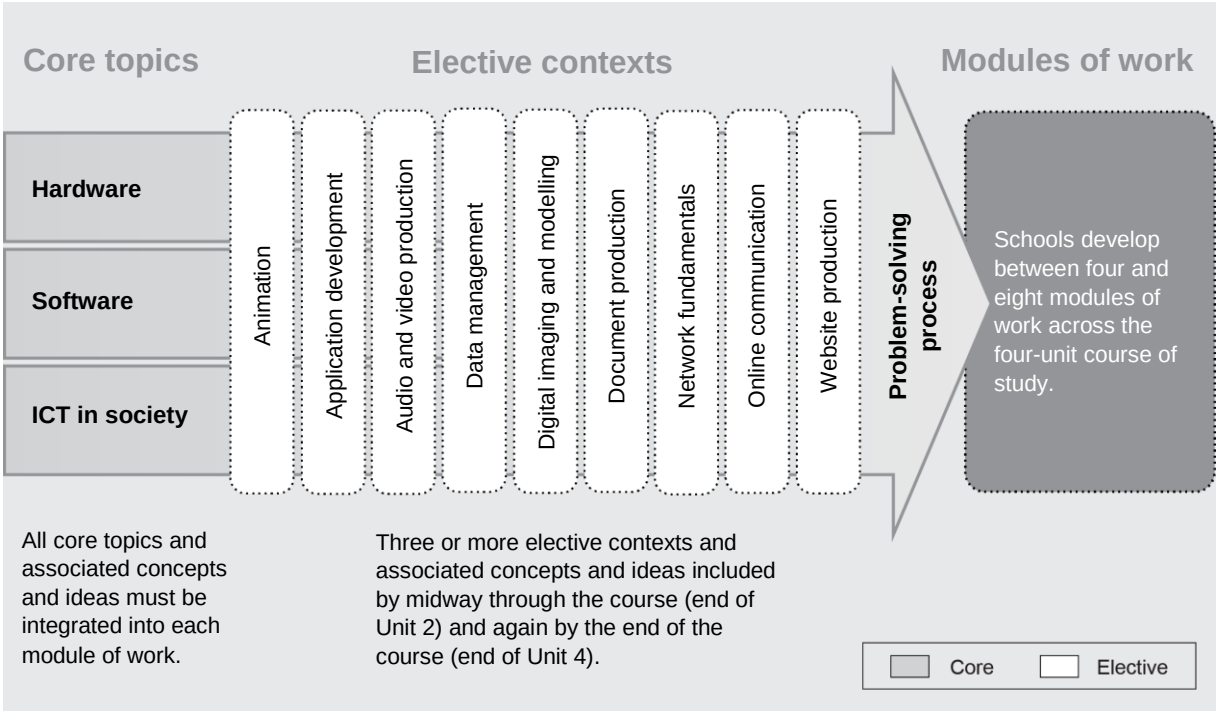
- use of a problem-solving process in each module of work
- all core topics and their associated concepts and ideas integrated into each module of work in Units 1 and 2 and in Units 3 and 4
- three or more elective contexts and associated concepts and ideas included in Units 1 and 2 and revisited and further developed in Units 3 and 4

[4] ACARA, General Capabilities, Numeracy, www.australiancurriculum.edu.au/GeneralCapabilities/Numeracy/Introduction/Introduction.

- four to eight modules of work across the four-unit course of study
- each module of work based on one to three elective contexts.

These planning requirements are represented in the figure below.

Figure 2: Planning a course of study in ICT



1.2.4 Developing a module of work

A module of work outlines the objectives, problem-solving processes, core topics, concepts and ideas and knowledge, understanding and skills to be delivered through selected ICT contexts. Integration of electives into modules of work provides authentic and relevant learning experiences for students. Four to eight modules of work should be included across the four-unit course of study.

A module of work in Information and Communication Technology:

- provides opportunities for students to undertake a problem-solving process
- is based on one to three elective contexts; the chosen elective contexts and associated concepts and ideas are to be included in units 1 and 2 and further developed in units 3 and 4
- provides in-depth coverage of the core topics and associated concepts and ideas from the chosen electives
- provides opportunities for teaching, learning and assessment of the objectives of Knowing and understanding, Analysing and applying, and Producing and evaluating.

1.2.5 Aboriginal perspectives and Torres Strait Islander perspectives

The Queensland Government has a vision that Aboriginal and Torres Strait Islander Queenslanders have their cultures affirmed, heritage sustained and the same prospects for health, prosperity and quality of life as other Queenslanders. The QCAA is committed to helping achieve this vision, and encourages teachers to include Aboriginal perspectives and Torres Strait Islander perspectives in the curriculum.

The QCAA recognises Aboriginal peoples and Torres Strait Islander peoples, their traditions, histories and experiences from before European settlement and colonisation through to the present time. Opportunities exist in Information and Communication Technology to encourage engagement with Aboriginal peoples and Torres Strait Islander peoples, strengthening students' appreciation and understanding of:

- frameworks of knowledge and ways of learning
- contexts in which Aboriginal peoples and Torres Strait Islander peoples live
- contributions to Australian society and cultures.

Guidelines about Aboriginal perspectives and Torres Strait Islander perspectives and resources for teaching are available at www.qcaa.qld.edu.au/k-12-policies/aboriginal-torres-strait-islander-perspectives.

2 Subject matter

2.1 Core

The core describes the concepts, ideas, knowledge, understanding and skills for a course of study in Information and Communication Technology (ICT). Core learning for ICT is comprised of the problem-solving process and three core topics — Hardware, Software and ICT in society. The core topics are explored through a problem-solving process.

The three core topics are presented in tables on the following pages, where they are described through concepts and ideas and associated knowledge, understanding and skills:

- Core topic 1: Hardware
- Core topic 2 Software
- Core topic 3 ICT in society.

2.1.1 Core topic 1: Hardware

Concepts and ideas	Knowledge, understanding and skills
Hardware components and peripheral devices of a computer system have specific functions and specifications.	• functions and specifications of components of a computer, e.g. central processing unit (CPU), random access memory (RAM), read only memory (ROM), cache, hard drive, motherboards, power supply, video card, sound card, speed measurements, size measurements • functions and specifications of peripheral devices, e.g. printer, monitor, scanner, keyboard, mouse, speakers, universal serial bus (USB) flash device
Computer hardware and components should be identified and selected for specific user needs and purposes.	• user needs and purposes • computer hardware, devices and components meet the specific task requirements and user needs • options and methods for consideration, e.g. research different options, analyse specifications, cost-benefit analysis
Hardware support systems provide technical information to troubleshoot problems.	• storage of hardware • server-based software • utilities, e.g. diagnostic tests, reports, defragment a hard drive • fault detection, e.g. connection issues • solution planning

2.1.2 Core topic 2: Software

Concepts and ideas	Knowledge, understanding and skills
Software has different purposes and functions.	• systems software, e.g. operating systems software • applications software — local and online, e.g. word processors, spread sheets, email • programming software, e.g. integrated development environments (IDEs) – textual and/or visual • computer software installation and configuration • user computing needs assessment • software selection for different situations
There are both common interface features and specific techniques when using software.	• common interface features, e.g. file management, printing, editing • software specific techniques, e.g. application of audio editing effects, use of layers in image editing
Software support systems provide technical information to troubleshoot problems.	• technical information usage, e.g. help menu, online help, manuals • strategies for troubleshooting common problems, e.g. back-up procedures, diagnostic testing, deleting unused software and data files, detecting common signs of intrusion • different types of malware, e.g. viruses, worms, spyware, adware • software maintenance, e.g. operating system updates, application software updates, virus definitions, error checking
Data management techniques ensure access, storage, security and organisation of information.	• file management techniques, e.g. copy, move, folders, archiving, file-naming conventions, tagging • data management, e.g. spread sheets, databases, storage — local, network, cloud • safeguards, e.g. effective passwords, secure websites, firewalls, biometric data

2.1.3 Core topic 3: ICT in society

Concepts and ideas	Knowledge, understanding and skills
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• appropriate use of equipment, procedures and techniques, e.g. use a wrist support, ensure power is off before opening computer casing, use proper lifting techniques • workplace health and safety legislation, guidelines and procedures • organisational and workplace policy, procedures and guidelines for the protection of computer systems and networks
Specific practices exist to ensure the ethical use, security and safety of the user.	• legal obligations related to ownership and ethical use of digital products, e.g. plagiarism, music and video file downloading • compliance with acceptable-use policies, e.g. protection of client information, transfers of copyright material, safeguarding passwords • digital citizenship, e.g. online ethical and responsible practices, email etiquette, digital footprint in social media • preventative practices to avoid lost or corrupt data, e.g. data backup systems • ethical data management • retrieval of lost or corrupt data through the development of disaster recovery plans • risks to identity, privacy and personal safety when using ICT and appropriate security strategies, e.g. cyber stalking, cyber bullying, privacy policies, social cost of hacking
Society is affected by past, new and emerging ICT.	• past ICT, e.g. access to information, electronic messaging, storage capacities, connection types and speeds • relationships between social and economic factors and the development of new technology, e.g. desire to be connected with family and friends drives telephone and device design • value and place of ICT use at home, school and work • new and emerging ICT, e.g. changes in working conditions, telecommuting, adaptive technology, portable computing devices, engaging in online communities

2.1.4 Problem-solving process

In Information and Communication Technology (ICT), core learning is explored through a problem-solving process.

A problem-solving process provides a framework to support teaching and learning when developing solutions to ICT problems.

ICT problems are matters or issues to be solved, or tasks where the students do not initially know which procedures to use to solve the problems. ICT problems could be established and framed within scenarios, client briefs, issues to examine, or tasks. ICT problems will identify a set of criteria for success.

A problem-solving process is essential to teaching and learning in ICT and must be incorporated into each module of work.

The table below provides an example of a problem-solving process that is underpinned by three distinct phases:

- problem identification
- planning and applying
- producing and evaluating.

This allows aspects of the problem to be identified and investigated; knowledge, understanding and skills to be applied when planning, developing and presenting solutions; and solutions to be produced and evaluated.

Table 2: An example of a problem-solving process

	Phase 1: Problem identification	Phase 2: Planning and applying	Phase 3: Producing and evaluating
Documentation use visual representations and language conventions and features to communicate ideas and information	• identification and clarification of the problem • identification of the purpose and audience • identification of the requirements related to the problem	• analysis and examination of the problem to identify possible solutions • organisation of information • application of concepts, ideas, knowledge, understanding and skills and procedures to complete tasks	• plan an approach that produces the best solution to the problem • test the viability of the solution for the intended purpose • use criteria to evaluate the effectiveness of the processes and solution in order to make recommendations

2.2 Electives

In Information and Communication Technology (ICT), electives are described as elective contexts.

Elective contexts are current work, study and leisure environments in which ICT are used.

Elective contexts provide for the development and integration of the core topics and associated concepts and ideas.

The selection of elective contexts is dependent on the interests of the student cohort, the expertise of teachers and the available facilities and resources.

Each elective context is explored through a problem-solving process in sufficient depth to cover all core concepts and ideas.

The elective contexts are described using the core topics and associated concepts and ideas. Specific knowledge, understanding and skills are suggested for each elective and presented in tables on the following pages.

A maximum of three elective contexts may be integrated within a module of work.

There are nine possible elective contexts:

- Elective context 1: Animation
- Elective context 2: Application development
- Elective context 3: Audio and video production
- Elective context 4: Data management
- Elective context 5: Digital imaging and modeling
- Elective context 6: Document production
- Elective context 7: Network fundamentals
- Elective context 8: Online communication
- Elective context 9: Website production.

2.2.1 Elective context 1: Animation

Focus	
The 'Animation' elective focuses on students designing and producing animated graphic images and creating 2D or 3D digital animation using animation software to solve technical and/or creative problems. Animation can be evident as part of a game, website, multimedia presentation or as a stand-alone animation.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• various connections and their relationship to the importation of resources and display of an animation, e.g. video graphics array (VGA), high-definition multimedia interface (HDMI), universal serial bus versions 2 and 3 (USB 2/3) • import images using input devices, e.g. scanners, digital cameras • connect appropriate peripherals to a computer for the purpose of 2D and 3D animation creation
Computer hardware and components should be identified and selected for specific user needs and purposes.	• hardware capabilities, e.g. processing capabilities, storage devices, graphics capabilities • minimum hardware specifications, e.g. processing capabilities, storage devices, graphics capabilities for the various production types of animation — stop motion, 2D, 3D
Hardware support systems provide technical information to troubleshoot problems.	• trouble-shooting guides and online tools provide assistance
Software	
Software has different purposes and functions.	• general features of, and differences between, the various types of 2D digital animation and a 3D digital animation • typical 2D and/or 3D digital animation features, e.g. stop motion, basic games, buttons, characters, illustrations, logos, puzzles, text, titles
Software support systems provide technical information to troubleshoot problems.	• manuals and built-in help functions • community-help forums and crowd-help features and online sources
Data management techniques ensure access, storage, security and organisation of information.	• produce concept drawing, e.g. storyboarding, animation planning, story trees, digital illustrations, freehand sketches • capture, manipulate and store animations using animation • data management techniques used to store and manage animation assets

There are both common interface features and specific techniques when using software.	• 2D and 3D design software applications, e.g. computer-aided design software, Blender, Google SketchUp • modelling and animation software, e.g. – modelling and animation of objects that are built to exact specifications, e.g. person-made objects such as props, sets, robots, vehicles – animation of people, creatures, and other elements • advanced animation features, e.g. filters, plug-ins, modules • modify settings and output to suit requirements • visual effects animation techniques, e.g. – visual effects shots — smoke, dust, snow, explosions, debris, and special lighting tricks – additional motion plug-ins, combining elements (some photographed, some animated) – special effects for screen – artwork produced from live action reference – titles created for screen productions – produce camera-ready animation • motion capture techniques, e.g. performance enhancement, error correction, motion editing, planning and execution, post production, editing, sound effects • character animation techniques, e.g. 2D animation, 3D animation and modelling, animation for games, artwork produced from live action reference, key drawings for animation produced • export and optimise animation considering quality, resolution, file size and the storage and media type of the final product • basic screen principles, e.g. editing, framing, lighting, montage, narrative, storytelling • principles of visual design, e.g. balance, composition, emphasis, focal point, movement, perspective, proportion, scale, unity
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• application of safe work practices and procedures relevant to the production of digital animated sequences and use of ICT, e.g. compliance with Occupational Health and Safety (OHS), effects of spending long periods of time using ICT without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. volume control, head sets, workplace environment, that is natural lighting, configurable chair and desk, repetitive strain injury (RSI) considerations
Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal issues concerned with digital rights management (DRM) • protection of intellectual property with copyright • role of DRM in controlling access to animations
Society is affected by past, new and emerging ICT.	• animation developments and advancements, e.g. cartoon creation

2.2.2 Elective context 2: Application development

Focus	
The 'Application development' elective focuses on students developing software applications for a variety of devices to solve technical and/or creative problems. These software applications can be focused on mobile applications, games, robotics or other forms of software.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• different devices, e.g. personal computers, gaming consoles, portable devices, robotic devices and components • capabilities of different hardware platforms, e.g. resolutions, inputs, operating systems • hardware trends in application development, e.g. robotics embedded in machinery, i.e. self-parking cars, mechanical responses to software, i.e. vibration and sound, increased importance of the video card in contemporary games market
Computer hardware and components should be identified and selected for specific user needs and purposes.	• selection of hardware should be based on a range of factors, e.g. clients' needs, user specifications, intended purpose of the software • type of input and output devices need to be considered when designing software to meet the client needs
Hardware support systems provide technical information to troubleshoot problems.	• use and production of user guides and manuals used to problem-solve hardware-related issues
Software	
Software has different purposes, processing and functions.	• visual and textual application development software, e.g. Adobe Flash, App Inventor, PHP, Python graphical user interfaces (GUI), GameMaker, Mindstorms, Bricx Command Center to develop software • factors affecting the selection of the application software, e.g. hardware choices, user needs, cost, availability, outputs for different devices • design concepts and considerations when selecting and using software, e.g. aesthetics, cultural context, genre, resource limitations, constraints, target market • relationship between front/back end development exploring concepts such as local, cloud or server-side processing
There are both common interface features and specific techniques when using software.	• programming languages have common features, e.g. rules and syntax • software development packages often use similar conventions to develop software, e.g. property inspectors, menus, code/scripting windows, graphical user interfaces (GUIs), plugins, presets, templates • issues relating to developing software to suit a range of devices, e.g. iOS and Android devices, consoles, robots, desktops and laptops • technical specifications and considerations of the software package and/or application, e.g. backup procedures, disk or memory space, format for final product, navigation design, loading images
Software support systems provide technical information to troubleshoot problems.	• develop user guides/technical documentation and 'how-to' documents to assist clients • debug code and programs • provide clients with a bug or feature request feedback process

Data management techniques ensure access, storage, security and organisation of information.	• implications of software size • beta and final testing • security and storage of data in software packages • logical structuring and conventions for file names and directory structure
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• application of safe work practices and procedures relevant to use of ICT, e.g. compliance with Occupational Health and Safety (OHS), effects of spending long periods of time using ICT without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. volume control, head sets, workplace environment, that is natural lighting, configurable chair and desk, repetitive strain injury (RSI)
Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal issues relating to application development, e.g. mature themes and content, viruses in copied games, obsessive behaviour in gaming, software monopolies, variety of distribution models, encryption and security • data security for any information stored by applications
Society is affected by past, new and emerging ICT.	• computer controlled technology is used in everyday life in different ways, e.g. lifts and buildings, robotics, traffic management, financial services, assistive technology • impact of advanced technology in areas of industry, e.g. job displacement, automated services and depersonalisation • social issues relating to application development, e.g. online gaming, online gambling games, violent content in games, debate surrounding the effect computer games have on adolescent development • emerging trends in application development, e.g. mobile technology trends, rise of the software houses and the impact on large corporations, virtual reality, transition from software that is generic and for mass user appeal changing to user-specific software • theory behind game design • evolution of robotics

2.2.3 Elective context 3: Audio and video production

Focus	
The 'Audio and video production' elective focuses on students solving technical and/or creative problems through capturing or creating, manipulating, editing and communicating digital audio and video for a range of multimedia genres including websites, presentations, games and other interactive multimedia.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• peripheral devices, e.g. microphones, sound system, speakers, video cameras, phone • devices to capture audio and video, e.g. cameras, video recorders, microphones, voice recorder device, download of audio and video files • devices to transfer and store content, e.g. computer discs, digital video discs (CD/DVDs), hard drive, portable memory
Computer hardware and components should be identified and selected for specific user needs and purposes.	• selection of audio and video hardware and components to suit specific purposes, e.g. webcams, microphones, tripods
Hardware support systems provide technical information to troubleshoot problems.	• trouble-shooting guides and online tools provide assistance • access printed and online user guides and manuals
Software	
Software has different purposes and functions.	• different types of application software, e.g. Vegas, Movie Maker, Acid, Adobe Premiere • different factors affect the selection of the application software, e.g. hardware choices, user needs, cost, availability
There are both common interface features and specific techniques when using software.	• camera operation techniques, e.g. focus, shot angles, lighting, composition and framing, background, distance, dolly • importing video clips, animations, audio, images and music • editing techniques for: – video, e.g. shot screening and viewing, split clips, combine clips, add titles and credits, merge, fade, wipe, fly-ins, etc., motion FX, clip speed, overlays – audio, e.g. converting audio files from one format to another, special effects, mixing techniques, time encoding, removing audio • post-production techniques, e.g. rendering, saving to format or presentation medium, burn to CD and DVD, control of file size and time management
Software support systems provide technical information to troubleshoot problems.	• use of manuals and built-in help functions • community help forums and crowd-help features and online sources

Data management techniques ensure access, storage, security and organisation of information.	• storage implications of various file types and settings, e.g. file size, transportability, security, resolution, frame rate, sample rate • digital rights management (DRM), creative commons and copyright laws relating to images • preparation for capturing a video or audio, e.g. scripting, outlines, storyboards, shooting schedule, equipment lists, shot list, production roles, mise en scene • management and organisation of project files and published files
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• application of safe work practices and procedures relevant to use of audio and visual software and hardware, e.g. compliance with Occupational Health and Safety (OHS), effects of spending long periods of time using audio and video software and hardware without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. volume control, head sets, workplace environment, that is natural lighting, configurable chair and desk, repetitive strain injury (RSI) • handle equipment safely and with care • choice of suitable shooting locations • care and maintenance of hardware
Specific practices exist to ensure the ethical use, security and safety of the user.	• use of manuals and built-in help functions • community help forums and crowd-help features and online sources
Society is affected by past, new and emerging ICT.	• accessibility

2.2.4 Elective context 4: Data management

Focus	
The ‘Data management’ elective focuses on students understanding and applying data management concepts, ideas and procedures to solve technical problems. Students will explore various methods of data storage, uses and management.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• ways of storing data, e.g. servers, local, peripheral devices, cloud storage • specifications of data storage devices, e.g. hard drives, external drives, web storage
Computer hardware and components should be identified and selected for specific user needs and purposes.	• selection of storage device considerations, e.g. storage capacity, speed of access, security to suit particular needs
Hardware support systems provide technical information to troubleshoot problems.	• defragmentation systems, running anti-virus programs, reformatting storage devices • use of support functions, e.g. online forums, knowledge-based articles, hardware help wizards, manuals, peripheral warranty

Software	
Software has different purposes and functions.	• different ways data can be stored and the advantages and disadvantages for particular purposes, e.g. flat files or relational databases • different functionalities of data systems when available online, on a local area network (LAN) or on a local computer • data may be accessed as required, or may be pushed to applications
There are both common interface features and specific techniques when using software.	• different data types are required to store different elements of information, e.g. numbers, text, Boolean • common features of data management, e.g. all data is organised in fields/columns, records/rows, tables/sheets • data is analysed and extracted in a variety of ways, e.g. structured query language (SQL), formulas, pivot tables, macros • inputting and formatting data methods, e.g. numbers, labels, formulae, colour, number and text format, alignment, decimal places, images, file, record, field • functions and operations, e.g. +, -, *, /, fill down or across, sort data, sum, average, max, min, if, now, date, insert, delete, update, sort, search, calculations and functions • use software to produce charts that visually represent data, e.g. types, labels, legend, data range • interpretation of data, e.g. what-if-analysis, macros, templates, queries and filters, e.g. select and order fields, conditional selection, group data, Boolean selection, multi-table queries • record navigation and report generation, e.g. format and layout, grouping, sorting, summary information
Software support systems provide technical information to troubleshoot problems.	• use an online help system to troubleshoot problems • data table details or spreadsheet restrictions determine what types of data can be stored and which data is required • site maintenance and update schedule
Data management techniques ensure access, storage, security and organisation of information.	• best practice ensures appropriate naming of fields, tables and functions in a database • organising data methods, e.g. designing tables, field properties, setting keys, populating tables, form design and layout • different users may have different permissions which determine what data they are able to access or edit • online data storage systems, e.g. library catalogues, product directories, dynamic websites
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• application of safe work practices and procedures relevant to use of ICT, e.g. compliance with Occupational Health and Safety (OHS), effects of spending long periods of time using ICT without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. workplace environment, that is natural lighting, configurable chair and desk, repetitive strain injury (RSI) • security and privacy are important in securing and providing access to collected data • understand the need to maintain data integrity in any data system — the consequences of storage of inaccurate data

Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal issues concerned with copyright • maintain and secure passwords to ensure secure access to data systems • privacy protocols, e.g. mailing lists, personalised marketing, spam • understand that each time personal data is entered it is stored in a data system
Society is affected by past, new and emerging ICT.	• data use has an impact on our everyday life • legal restrictions determine the use of data by governments and companies • data is moved globally which complicates the control on its ownership and uses

2.2.5 Elective context 5: Digital imaging and modelling

Focus	
The 'Digital imaging and modelling' elective focuses on students solving technical and/or creative problems through acquiring, creating and manipulating digital still images, models and graphical representations for a range of multimedia genres including websites, presentations, games and prototyping.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• different devices are used to capture images, e.g. camera, mobile phone, scanner • device specifications and features, e.g. operation, settings, storing, capabilities, resolution, methods of use
Computer hardware and components should be identified and selected for specific user needs and purposes.	• selection of hardware should be based on a range of factors, e.g. meeting client needs, costs, timing • output devices and considerations, e.g. 2D or 3D, resolution, materials used
Hardware support systems provide technical information to troubleshoot problems.	• identification of possible causes of faults with digital image hardware and devices • use trouble-shooting guides and online tools to provide assistance

Software	
Software has different purposes and functions.	• identification of digital imagery/modelling software capabilities, e.g. raster and vector images, 2D and 3D capabilities, compatibility between software packages • identification of software for different purposes, e.g. for image creation or manipulation, schematic design, modelling and prototyping
There are both common interface features and specific techniques when using software.	• common graphical user interfaces (GUI) elements in image software, e.g. layers, editing tools, effects • types of images, e.g. bitmapped, vector, gif, jpg, psd, tiff, raw, metafiles • techniques used for enhancing images, e.g. filter effects, masking, distortion, overlaying, colour adjusting • techniques used for manipulating images, e.g. size, orientation, red, green, blue (RGB) ratio, number of colours, brightness, contrast • effect of resolution on file size, resizing and appearance of image on different output devices
Software support systems provide technical information to troubleshoot problems.	• use of manuals and built-in help functions • community-help forums and crowd-help features and online sources
Data management techniques ensure access, storage, security and organisation of information.	• understand the storage implications of various file types and settings, e.g. file size, transportability, security, resolution, canvas size • working files versus publishing files
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• application of safe work practices and procedures relevant to the production of digital imaging and modelling, e.g. compliance with Occupational Health and Safety (OHS), effects of spending long periods of time using ICT without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. workplace environment, that is natural lighting, configurable chair and desk, repetitive strain injury (RSI) considerations • choice of suitable shooting locations
Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal issues, e.g. copyright, downloading of images and use of image manipulation tools • understand how identity management and information releases are required to ensure privacy and legal use of images • roles of digital rights management (DRM) and creative commons and copyright laws relating to controlling access to images • awareness of the speed of image distribution and duplication globally
Society is affected by past, new and emerging ICT.	• images are no longer records of fact, they are editable • images can be shared instantly around the world; social implications of this technology • emerging trends, e.g. rise of phenomenon like memes and their social impact

2.2.6 Elective context 6: Document production

Focus	
The 'Document production' elective focuses on students solving technical and/or creative problems through developing and applying knowledge and skills in using document production software to develop documents that enhance communication. This will include acquiring skills in creating a range of document types including word processing and publishing software.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• specifications of peripherals devices, e.g. scanner, printer, camera
Computer hardware and components should be identified and selected for specific user needs and purposes.	• application of specifications to select peripherals based on requirements, e.g. quality of output and speed of printing, pixel quality of cameras, types of inks used, cartridge/toner options • cost–benefit analysis of different options, e.g. ink costs, cost per page for colour and black/white, quality of camera e.g. single lens reflex (SLR)
Hardware support systems provide technical information to troubleshoot problems.	• trouble-shoot document capture and production issues with peripherals, e.g. camera, scanner and printer • use of support functions, e.g. online forums, knowledge-based articles, hardware help wizards, manuals, peripheral warranty
Software	
Software has different purposes and functions.	• types and purposes of document production software to meet application requirements, e.g. Microsoft Word to produce a structured report • knowledge of common features of software • understand the costs and benefits of different software • understand terms and conditions for using software, e.g. working offsite, commercial and non-commercial use, multiple uses on different devices
Software support systems provide technical information to troubleshoot problems.	• understand online help features, e.g. online forums, live support, online manual, knowledge base (KB) articles • use support tools and features, e.g. wizards, manuals, tutorials
Data management techniques ensure access, storage, security and organisation of information.	• verification of access to information, e.g. commercial-in-confidence, draft • establishment of version control during the document production process • privacy and confidentiality of the documents • organisation of documents, images, audio and video files, e.g. file structures, file management naming conventions

There are both common interface features and specific techniques when using software.	• identification of common interface features between the software options, e.g. Microsoft Word, OpenOffice Writer and Pages • identification of tools, methods and techniques for using different software suites, e.g. MS Office, Adobe, Google documents, Quick Office • considerations of the features of software options when recommending/selecting software to meet application requirements, e.g. templates, image libraries, font library • principles of effective document publishing including: – design process and layout principles, e.g. placement, grouping and alignment – document harmony, e.g. consistency, contrast, types and choice of fonts – function of colour and white space in a document – analysing good design in existing documents • techniques and tools of document publishing including: – text elements, e.g. character formatting, paragraph alignment and formatting, linking text frames, wrapping text, alignment, direction, special text effects – page layout and elements, e.g. page orientation, layout, margins, positioning, grouping, ungrouping – editing and proofreading, e.g. find and replace, spelling and grammar check, thesaurus, word count – graphic devices, e.g. lines, boxes, borders, images, tables, columns, shading, colour, graphical manipulation – additional features, e.g. mail merge, address labels, templates, macros, data entry forms
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• application of safe work practices and procedures relevant to use of ICT, e.g. compliance with Occupational Health and Safety (OHS), effects of spending long periods of time using audio and video software and hardware without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. workplace environment, that is natural lighting, configurable chair and desk, repetitive strain injury (RSI) • source ergonomic production devices, e.g. two monitors, ergonomic mouse and key board, use of stylus and drawing tablet
Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal issues — copyright and plagiarism, e.g. ethical access and use of photographs, illustrations and diagrams attributing sources • workplace requirements and policies, e.g. confidentiality of documents being produced
Society is affected by past, new and emerging ICT.	• history of document production, e.g. magazine production, that is printing press to digital, ease of production • emerging ICT in document production, e.g. economic efficiencies gained through rapid advancement in technology — typewriter to word processing to online publications • technology to link the printed document to the web, e.g. quick response (QR) codes

2.2.7 Elective context 7: Network fundamentals

Focus	
The 'Network fundamentals' elective focuses on students understanding network hardware and software components which allow sharing of data locally and globally. Students will produce solutions to technical problems using networks. These solutions may then be implemented and evaluated.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• purpose and function of network components, e.g. network cards, switches, routers, servers, cables, access points • use of terms to describe networks, e.g. bandwidth • media for connecting across a network, e.g. copper, fibre optic, wireless
Computer hardware and components should be identified and selected for specific user needs and purposes.	• identification of various network scopes, e.g. local area networks (LANs), wide area networks (WANs), personal area networks (PANs), the cloud • identification of types of networks, e.g. peer-to-peer, client/server, wired/wireless • understand network topologies, e.g. star, bus, ring • identification of the purpose of networking, e.g. local versus wide network, restricted access
Hardware support systems provide technical information to troubleshoot problems.	• access and use of logs to identify and troubleshoot problems • use help systems to analyse problems and find possible solutions
Software	
Software has different purposes and functions.	• software is used to enable interaction on a network, e.g. browsers, file sharing, apps, cloud services and cloud storage • different protocols are used for specific purposes, e.g. http, ftp, smtp, transmission control protocol (TCP), internet protocol (IP)
There are both common interface features and specific techniques when using software.	• network protocols, e.g. internet protocol (IP) addresses, email addressing, uniform resource locators (URLs) • data transfer techniques, e.g. using packets
Software support systems provide technical information to troubleshoot problems.	• analysis software is used to provide feedback on performance and logs from hardware and software components in a system
Data management techniques ensure access, storage, security and organisation of information.	• network services used to provide storage and backup of data, e.g. cloud storage, file servers on a local area network (LAN) • encryption is used to ensure security of data transferred on a network • software and online solutions are used to create network diagrams and layouts

ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• application of safe work practices and procedures relevant to use of ICT, e.g. compliance with Occupational Health and Safety (OHS), effects of spending long periods of time using audio and video software and hardware without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. workplace environment, i.e. natural lighting, configurable chair and desk, repetitive strain injury (RSI)
Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal issues — copyright • privacy policies and protocols, e.g. mailing lists, personalised marketing, spam • statistical information bias • ensure security of personal and company information when using networks for access and communication • maintaining effective protection — changing passwords, using effective passwords • protection against malware when accessing a network
Society is affected by past, new and emerging ICT.	• the impact of the internet on society, e.g. connectedness, immediacy of information • impact of the growth of the internet and data on nations and law enforcement • advantages and disadvantages for individuals and organisations of using networks in a global environment

2.2.8 Elective context 8: Online communication

Focus	
The ‘Online communication’ elective focuses on students solving technical and/or creative problems through acquiring an understanding of types of online communities and their needs, and the types, purposes and functionality of specific types of websites that support information exchanges, including wikis, blogs, forums and social networking sites. Students will explore various communications technologies that are used to develop online communities.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• specifications of peripheral devices, e.g. headsets, webcams, microphones, cameras, input devices • accessibility devices, e.g. mobile phones, tablets • capabilities and specifications of wired and wireless communications technologies to support local and remote communications
Computer hardware and components should be identified and selected for specific user needs and purposes.	• application of specifications to select peripherals based on application needs, e.g. pixel quality of cameras, sound quality of recording formats, bandwidth limitations, software compatibility • cost–benefit analysis of different hardware options
Hardware support systems provide technical information to troubleshoot problems.	• trouble-shoot hardware problems • use of support functions, e.g. online forums, knowledge base (KB) articles, software help wizards

Software	
Software has different purposes and functions.	• understand the nature of online communities, e.g. who participates in and constructs online communities, strategies for encouraging participation, needs of community members that affect the nature of websites • types and purposes of online communities, e.g. social, work-based, project/interest-based, collaborative, knowledge sharing • applications and design of online services and events, e.g. e-commerce, virtual schooling, learning online, research collaboration
There are both common interface features and specific techniques when using software.	• identification of common interface features between the software options, e.g. comments on different social media sites • tools, methods and techniques in online communities, e.g. websites, email, chat, news, weblogs, forums, collaborative documents, instant messaging, SMS, video conferencing, virtual worlds, social networks, network gaming environments, uploading images
Software support systems provide technical information to troubleshoot problems.	• understand online help features, e.g. online forum help, live support
Data management techniques ensure access, storage, security and organisation of information.	• online storage considerations, e.g. ownership rights, closing your account • security and privacy settings, e.g. verifying identities of those with access to information • organisation of online content, e.g. file structures and naming conventions
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• health and safety procedures and techniques, e.g. effects of spending long periods of time using ICT without a break, need for regular rest breaks, avoiding eyestrain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. volume control, workplace environment, lighting, repetitive strain injury (RSI)
Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal requirements, e.g. cyber safety, liability • protocols and codes of conduct, e.g. professional standards, etiquette, netiquette for interacting with others privately and in public forums • safety and security strategies, e.g. verifying identities of those with access to your information, password/access security and maintenance, online censorship, spoofing, phishing, strategies to respond to inappropriate sites and offensive online behaviour
Society is affected by past, new and emerging ICT.	• emerging trends in online communities, e.g. social media use, identity theft and fraud, connecting people and ease of communication • empowerment for groups to participate in political, environmental, financial, social and cultural debates through online technology and tools

2.2.9 Elective context 9: Website production

Focus	
The 'Website production' elective focuses on students designing, producing, publishing and maintaining websites to solve technical and/or creative problems.	
Concepts and ideas	**Knowledge, understanding and skills**
Hardware	
Components and peripheral devices of a computer system have specific functions and specifications.	• specifications of required peripherals devices, e.g. multimedia computer, scanner, camera to capture stills, audio and video, drawing tablet • server requirements to host published website
Computer hardware and components should be identified and selected for specific user needs and purposes.	• application of specifications to select peripherals based on application needs, e.g. pixel quality of camera, sound and picture quality of audio and video capture devices • cost–benefit analysis of different hardware options, e.g. internal components of a multimedia computer, hosting, quality and size of drawing tablets
Hardware support systems provide technical information to troubleshoot problems.	• troubleshooting web development issues when using peripherals devices, e.g. camera, scanner, drawing tablet • use of support functions, e.g. online forums, knowledge-based articles, hardware help wizards, manuals, peripheral warranty
Software	
Software has different purposes and functions.	• purposes of websites determine design, e.g. search engines, search techniques, information, database management • identification of types and purposes of software and selection of tools to meet application requirements • cost–benefit analysis of different software • understand terms and conditions for using software, e.g. working offsite, commercial and non-commercial use, multiple uses on different devices
Software support systems provide technical information to troubleshoot problems.	• understand online help features, e.g. online forums, live support, online manuals, knowledge base (KB) articles • web accessibility, e.g. users with disabilities, accessible across platforms, operating systems, browsers and devices • reference and adherence to web accessibility guidelines, World Wide Web Consortium (W3C) standards
Data management techniques ensure access, storage, security and organisation of information.	• establishment of version control process during the development process • navigation and content hierarchy to ensure easy access • production of a visual representation of a website showing navigation • organisation of web pages and associated linked documents, images, audio and video files, e.g. file structures and naming conventions

There are both common interface features and specific techniques when using software.	• identification of common interface features between software options, e.g. Dreamweaver, Sublimetext and Amaya • identification of tools, methods and techniques for using different software, e.g. templates, libraries, SSI, XHTML, XML CSS, to ensure ease of development and maintenance • techniques for website development including: – elements of good website design, e.g. navigation and usability, page elements and layout – website features, e.g. headings, content, backgrounds and effects, images, lines, lists, tables, frames, banners, marques, hit counters, animations, search, data entry forms – navigation, e.g. site map, hyperlinks, and breadcrumb trail • techniques for web page design including: – design process and layout principles, e.g. placement, grouping and alignment – document harmony, e.g. consistency, contrast, types and choice of fonts; function of colour and white space; analysing good design in existing web pages – setting up website on servers, e.g. operating systems, web server software, protocols, security, proxy servers
ICT in society	
Appropriate equipment, procedures and techniques need to be used when working with computers to protect health and ensure safety.	• health and safety procedures and techniques, e.g. effects of spending long periods of time using ICT without a break, need for regular rest breaks, avoiding eye strain, correct posture and effective equipment position and system ergonomics • physical harm minimisation, e.g. volume control, head sets, workplace environment, that is natural light, configurable chair and desk, RSI considerations
Specific practices exist to ensure the ethical use, security and safety of the user.	• ethical and legal issues — copyright, e.g. ethical access and use of video, audio and images, attributing sources, use of creative commons • ethical issues, e.g. denial of service (DoS) attacks on websites, cybercrime on the internet, phishing, confidentiality and privacy on the internet, bias in web content • code of conduct, e.g. confidential areas of a website, that is secure access only, password required, commercial-in-confidence • secure web pages and forms, e.g. https protocol, secure storing of collected user information in database
Society is affected by past, new and emerging ICT.	• features of internet technology, e.g. virtual worlds, use of the cloud, augmented reality, quick response (QR) codes • emerging trends in website development, e.g. advancement from text only pages to multimodal websites comprising animations, augmented reality audio and video • history of web development from developers typing code to using HyperText Markup language (HTML) editor, e.g. evolution of HTML code for web development; skilled role to everyone being able to publish on the web • accessibility of website content across different ability users and devices • validity, trustworthiness and currency of website content

3 Assessment

3.1 Assessment — general information

Assessment is an integral part of the teaching and learning process. It is the purposeful, systematic and ongoing collection of information about student learning outlined in the syllabus.

The major purposes of assessment are to:

- promote, assist and improve learning
- inform programs of teaching and learning
- advise students about their own progress to help them achieve as well as they are able
- give information to parents, carers and teachers about the progress and achievements of individual students to help them achieve as well as they are able
- provide comparable exit results in each Applied syllabus which may contribute credit towards a Queensland Certificate of Education (QCE); and may contribute towards Australian Tertiary Admission Rank (ATAR) calculations
- provide information about how well groups of students are achieving for school authorities and the State Minister responsible for Education.

Student responses to assessment opportunities provide a collection of evidence on which judgments about the quality of student learning are made. The quality of student responses is judged against the standards described in the syllabus.

In Applied syllabuses, assessment is standards-based. The standards are described for each objective in each of the three dimensions. The standards describe the quality and characteristics of student work across five levels from A to E.

3.1.1 Planning an assessment program

When planning an assessment program over a developmental four-unit course, schools should:

- administer assessment instruments at suitable intervals throughout the course
- provide students with opportunities in Units 1 and 2 to become familiar with the assessment techniques that will be used in Units 3 and 4
- assess all of the dimensions in each unit
- assess each objective at least twice by midway through the course (end of Unit 2) and again by the end of the course (end of Unit 4)
- assess only what the students have had the opportunity to learn, as prescribed in the syllabus and outlined in the study plan.

For a student who studies four units only assessment evidence from Units 3 and 4 contributes towards decisions at exit.

Further guidance can be found in the QCE and QCIA policy and procedures handbook.

3.1.2 Authentication of student work

Schools and teachers must have strategies in place for ensuring that work submitted for internal summative assessment is the student's own.

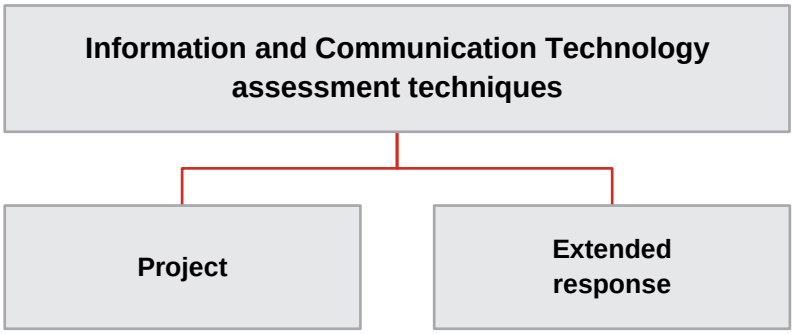
Judgments about student achievement are based on evidence of the demonstration of student knowledge, understanding and skills. Schools ensure responses are validly each student's own work.

Guidance about authentication strategies which includes guidance for drafting, scaffolding and teacher feedback can be found in the QCE and QCIA policy and procedures handbook.

3.2 Assessment techniques

The diagram below identifies the assessment techniques relevant to this syllabus. The subsequent sections describe each assessment technique in detail.

Figure 3: Information and Communication Technology assessment techniques



Schools design assessment instruments from the assessment techniques relevant to this syllabus. The assessment instruments students respond to in Units 1 and 2 should support those techniques included in Units 3 and 4.

For each assessment instrument, schools develop an instrument-specific standards matrix by selecting the syllabus standards descriptors relevant to the task and the dimension/s being assessed (see Standards matrix).

The matrix is used as a tool for making judgments about the quality of students' responses to the instrument and is developed using the syllabus standards descriptors. Assessment is designed to allow students to demonstrate the range of standards (see Determining an exit result). Teachers give students an instrument-specific standards matrix for each assessment instrument.

Where students undertake assessment in a group or team, instruments must be designed so that teachers can validly assess the work of individual students and not apply a judgment of the group product and processes to all individuals.

Evidence

Evidence includes the student's responses to assessment instruments and the teacher's annotated instrument-specific standards matrixes. Evidence may be direct, e.g. student responses to assessment instruments, or indirect, e.g. supporting documentation. Within a student folio indirect evidence should be balanced with direct evidence.

Further guidance can be found in the QCE and QCIA policy and procedures handbook.

Conditions of assessment

Over a four-unit course of study, students are required to complete assessment under a range of conditions (see Planning an assessment program).

Conditions may vary according to assessment. They should be stated clearly on assessment instruments, for example:

- supervised or unsupervised
- individual, group or team
- time allowed (with perusal time as needed)
- length required
- using sources and/or notes (open book).

Where support materials or particular equipment, tools or technologies are used under supervised conditions, schools must ensure that the purpose of supervised conditions (i.e. to authenticate student work) is maintained.

Assessment of group work

When students undertake assessment in a group or team, instruments must be designed so that teachers can validly assess the work of individual students and not apply a judgment of the group product and processes to all individuals.

3.2.1 Project

Purpose

This technique assesses a response to a single task, situation and/or scenario in a module of work that provides students with authentic and/or real-world opportunities to demonstrate their learning. The student response will consist of a collection of **at least two** assessable components, demonstrated in different circumstances, places and times, and may be presented to different audiences, and through differing modes.

Dimensions to be assessed

This assessment technique is to be used to determine student achievement in objectives from all of the following dimensions:

- Knowing and understanding
- Analysing and applying
- Producing and evaluating.

All objectives from each dimension must be assessed

Types of projects

A project occurs over a set period of time. Students may use class time and their own time to develop a response.

A project involves students undertaking and documenting a **problem-solving process** when developing solutions for a client.

A project consists of **a product component** and at least **one** of the following components:

- written, e.g. conference materials including the program and evaluation, dinner menu for the conference, action plan
- spoken, e.g. an explanation of a process or a procedure undertaken when creating a short video or a webpage
- multimodal, e.g. develop and present a sales pitch on a website that has been created for potential clients.

The selected assessable components must contribute significantly to the task and to the overall result for the project. A variety of technologies may be used in the creation or presentation of the response.

Note: Spoken delivery of a written component or a transcript of a spoken component (whether written, electronic, or digital) constitutes one component, not two.

In Information and Communication Technology each project must contain evidence of the student's engagement with a problem-solving process showing the different phases. This evidence should match the syllabus standard descriptors.

Examples of projects in Information and Communication Technology Applied Syllabus 2014 include:

- using ICT to deal with a particular problem the school is facing, e.g. the planning, creating and presenting of a short video to promote a school priority, i.e. keeping the grounds clean (written, product and multimodal components)
- using ICT to respond to a client brief, e.g. planning, creating and presenting a suite of conference materials, e.g. stage banners, promotional posters, business cards, programs and dinner menus for 'Comic-Con' (written, product and spoken components)
- using ICT to respond to a scenario involving a company wanting to promote a training package for a software suite, e.g. the planning, development and creation of animated clips to illustrate a training package for a software suite; included in the response will be justification for choosing animated clips to illustrate the training package (written and product components).

Product component

This component refers to the production of Information and Communication Technology products and will be the outcome of applying a range of cognitive, technical, physical and/or creative/expressive skills.

Product assessments involve student application of identified skill/s in Information and Communication and Technology.

Examples of products in Information and Communication Technology include:

- a webpage
- a 2D or 3D digital animation
- a video or audio clip
- a mobile application
- a wiki.

Written component

This component requires students to use written language to communicate ideas and information to readers for a particular purpose. A written component may be supported by references or, where appropriate, data, tables, flow charts or diagrams.

Examples include:

- articles for magazines or journals
- essays, e.g. analytical, persuasive/argumentative, informative
- reviews, e.g. literature, film
- letters to the editor
- reports, which will normally be presented with section headings, and may include tables, graphs and/or diagrams, and analysis of data supported by references.

Examples of written components in Information and Communication Technology Applied Syllabus 2014 include: article for an ICT magazine or journal, essay on the ongoing evolution of ICT in society, review of a blog or forum, letter to the editor about the use of social media in the workplace or a critical comparison of websites.

Spoken component

This component requires students to use spoken language to communicate ideas and information to a live or virtual audience (that is, through the use of technology) for a particular purpose.

Examples include:

- oral presentations
- debates
- interviews
- podcasts
- seminars.

Examples of spoken components in Information and Communication Technology Applied Syllabus 2014 include:

- an explanation of a procedure
- reflections and evaluation of a proposed solution
- sales or marketing pitch.

Multimodal component

This component requires students to use a combination of at least two modes **delivered at the same time** to communicate ideas and information to a live or virtual audience for a particular purpose. The selected modes are integrated to allow both modes to contribute significantly to the multimodal component. Modes include:

- written
- spoken/signed
- nonverbal, e.g. physical, visual, auditory.

Examples include:

- digital presentations
- vodcasts
- seminars
- webinars.

A variety of technologies may be used in the creation or presentation of the component. Replication of a written document into an electronic or digital format does not constitute a multimodal component.

Multimodal components in Information and Communication Technology will explicitly use ICT resources. Examples of multimodal components in Information and Communication Technology Applied Syllabus 2014 include:

- developing and presenting a sales pitch on a mobile application that has been created for potential clients
- facilitating a webinar with a client to show them work-in-progress on a suite of conference materials that are being prepared for an upcoming conference
- data and graphs
- animation of clips/slides with transitions and accompanying audio video explanation of processes and interviews.

Assessment conditions	Units 1–2	Units 3–4
Product component	Schools provide students with some continuous class time to develop and demonstrate the product component/s of their project.	
Written component	400–700 words	500–900 words
Spoken component	1½ – 3½ minutes	2½ – 3½ minutes
Multimodal component	2–4 minutes	3–6 minutes

Further guidance

When implementing assessment instruments for the project technique, teachers:

- define for students or work with students to define the task, situation or scenario, and purpose for the project; all components of the project must clearly relate to this single task, situation or scenario
- establish the required length of student responses within the assessment conditions (see above); the required length of student responses should be considered in the context of the tasks — longer is not necessarily better; words lengths and time limits are given as guides
- clearly indicate the dimensions and objectives that will be assessed and explain to students the requirements of the task, including instrument-specific standards
- teach the objectives, knowledge, understanding and skills students need to complete all components of the project
- teach the requirements for each component of the project, e.g. diagrams, report on the condition of an animal/plant, demonstration of mixing fertiliser
- allow some continuous class time for students to work towards completing each component of the project; independent student time may also be required to complete the response
- implement strategies to promote authentication of student work; e.g. note-taking, journals, blogs or logs, drafting, research checklists, referencing, teacher observation sheets
- consult, negotiate and provide feedback while students are developing their response to the project, e.g. to provide guidance about ethical matters and to monitor the progress of student work.

3.2.2 Extended response

Purpose
This technique assesses the interpretation, analysis/examination and/or evaluation of ideas and information in provided stimulus materials. While students may undertake some research in the writing of the extended response, it is not the focus of this technique.
Dimensions to be assessed
This assessment technique is to be used to determine student achievement in objectives from all of the following dimensions: • Knowing and understanding • Analysing and applying • Producing and evaluating. Not every objective from each dimension needs to be assessed.
Types of extended response
An extended response occurs over a set period of time. Students may use class time and their own time to develop a response. Students respond to a question or statement about the provided stimulus materials. Stimulus material could include: • websites • case studies • images, video and/or audio • media articles • client brief.
Written response
This response requires students to use written language to communicate ideas and information to readers for a particular purpose. A written response may be supported by references or, where appropriate, data, tables, flow charts or diagrams. Examples include: • ICT article for a magazine or journal • letter to the editor about the use of social media in the workplace • report, which will normally be presented with section headings, and may include tables, graphs and/or diagrams, and analysis of data supported by references • critical comparison of websites.
Spoken response
This response requires students to use spoken language to communicate ideas and information to a live or virtual audience (that is, through the use of technology) for a particular purpose. Examples include: • oral presentations • debates • interviews • podcasts • seminars.

Multimodal response

This response requires students to use a combination of at least two modes **delivered at the same time** to communicate ideas and information to a live or virtual audience for a particular purpose. The selected modes are integrated to allow both modes to contribute significantly to the multimodal response. Modes include:

- written
- spoken/signed
- nonverbal, e.g. physical, visual, auditory.

Examples include:

- digital presentations
- vodcasts
- seminars
- webinars.

A variety of technologies may be used in the creation or presentation of the response. Replication of a written document into an electronic or digital format does not constitute a multimodal response.

When making judgments about multimodal responses, teachers apply the standards to the entire response, i.e. to all modes used to communicate the response.

Multimodal responses in Information and Communication Technology will explicitly use ICT resources. Examples of multimodal responses in Information and Communication Technology Applied Syllabus 2014 include:

- developing and presenting a sales pitch on a mobile application that has been created for potential clients
- facilitating a webinar with a client to show them work-in-progress on a suite of conference materials that are being prepared for an upcoming conference
- data and graphs
- animation of clips
- slides with transitions and accompanying audio
- video explanation of processes and interviews.

Assessment conditions	Units 1–2	Units 3–4
Written	500–800 words	600–1000 words
Spoken	2–4 minutes	3–4 minutes
Multimodal	3–5 minutes	4–7 minutes

Further guidance

When implementing assessment instruments for the extended response technique, teachers:

- provide stimulus for students and establish a focus for the extended response, or work with students to select suitable stimulus and/or develop a focus for the response
- establish the required length of student responses within the assessment conditions (see above); the required length of student responses should be considered in the context of the tasks — longer is not necessarily better; words lengths and time limits are given as guides
- clearly indicate the dimensions and objectives that will be assessed and explain to students the requirements of the task, including instrument-specific standards
- teach the objectives, knowledge, understanding and skills students need to complete the extended response
- teach the written, spoken or multimodal form/s required for student responses, e.g. report, presentation, seminar
- allow some continuous class time for students to work towards completing each component of the project; independent student time may also be required to complete the response
- implement strategies to promote authentication of student work; e.g. note-taking, journals, blogs or logs, drafting, research checklists, referencing, teacher observation sheets
- consult, negotiate and provide feedback while students are developing their extended response, e.g. to provide guidance about ethical matters and to monitor the progress of student work.

3.3 Exiting a course of study

3.3.1 Folio requirements

A folio is a collection of one student's responses to the assessment instruments on which exit results are based. The folio is updated when earlier assessment responses are replaced with later evidence that is more representative of student achievement.

3.3.2 Exit folios

The exit folio is the collection of evidence of student work from Units 3 and 4 that is used to determine the student's exit result. Each folio must include:

- four assessment instruments, and the student responses
- evidence of student work from Units 3 and 4 only
- evidence of all dimensions being assessed in each assessment instrument
- at least two projects
- at least one extended response
- a student profile completed to date.

3.3.3 Exit standards

Exit standards are used to make judgments about students' exit result from a course of study. The standards are described in the same dimensions as the objectives of the syllabus. The standards describe how well students have achieved the objectives and are stated in the standards matrix.

The following dimensions must be used:

- Dimension 1: Knowing and understanding
- Dimension 2: Analysing and applying
- Dimension 3: Producing and evaluating.

Each dimension must be assessed in each unit, and each dimension is to make an equal contribution to the determination of an exit result.

3.3.4 Determining an exit result

When students exit the course of study, the school is required to award each student an A–E exit result.

Exit results are summative judgments made when students exit the course of study. For most students, this will be after four units. For these students, judgments are based on exit folios providing evidence of achievement in relation to all objectives of the syllabus and standards.

For students who exit before completing four units, judgments are made based on the evidence of achievement to that stage of the course of study.

Determining a standard

The standard awarded is an on-balance judgment about how the qualities of the student's responses match the standards descriptors in each dimension. This means that it is not necessary for the student's responses to have been matched to every descriptor for a particular standard in each dimension.

Awarding an exit result

When standards have been determined in each of the dimensions for this subject, the table below is used to award an exit result, where A represents the highest standard and E the lowest. The table indicates the minimum combination of standards across the dimensions for each result.

Table 3: Awarding an exit result

Exit result	Minimum combination of standards
A	Standard A in any two dimensions and no less than a B in the remaining dimension
B	Standard B in any two dimensions and no less than a C in the remaining dimension
C	Standard C in any two dimensions and no less than a D in the remaining dimension
D	At least Standard D in any two dimensions and an E in the remaining dimension
E	Standard E in the three dimensions

Further guidance can be found in the QCE and QCIA policy and procedures handbook.

3.3.5 Standards matrix

	Standard A	Standard B	Standard C	Standard D	Standard E
Knowing and understanding	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:
	• accurate identification and comprehensive explanation of software and hardware requirements related to ICT problems	• accurate identification and detailed explanation of software and hardware requirements related to ICT problems	• identification and explanation of software and hardware requirements related to ICT problems	• partial identification and simple description of software and hardware requirements related to ICT problems	• minimal identification and superficial description of software and hardware requirements
	• accurate identification and comprehensive explanation of the use of ICT in society.	• accurate identification and detailed explanation of the use of ICT in society.	• identification and explanation of the use of ICT in society.	• partial identification and simple description of the use of ICT in society.	• minimal identification and superficial description of the use of ICT in society.
Analysing and applying	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:	The student work has the following characteristics:
	• logical analysis of ICT problems to identify solutions	• considered analysis of ICT problems to identify solutions	• analysis of ICT problems to identify solutions	• description of aspects of ICT problems	• partial description of aspects of ICT problems
	• coherent communication of ICT information to an audience using a considered selection of visual representations and language conventions and features	• clear communication of ICT information to an audience using relevant visual representations and language conventions and features	• communication of ICT information to an audience using visual representations and language conventions and features	• vague communication of ICT information to an audience using visual representations and language conventions and features inconsistently	• unclear statements of ICT information
	• proficient application of software and hardware concepts, ideas and skills to complete tasks in a range of ICT contexts.	• competent application of software and hardware concepts, ideas and skills to complete tasks in a range of ICT contexts.	• application of software and hardware concepts, ideas and skills to complete tasks in ICT contexts.	• basic application of software and hardware concepts, ideas and skills to partially complete tasks in ICT contexts.	• use of software and hardware concepts, ideas and skills in ICT contexts.

	Standard A	Standard B	Standard C	Standard D	Standard E
Producing and evaluating	The student work has the following characteristics: • logical synthesis of ICT concepts and ideas to proficiently plan solutions to given ICT problems • production of solutions that systematically address ICT problems • reasoned evaluation of problem-solving processes and solutions, and logical recommendations made.	The student work has the following characteristics: • effective synthesis of ICT concepts and ideas to successfully plan solutions to given ICT problems • production of solutions that effectively address ICT problems • considered evaluation of problem-solving processes and solutions, and plausible recommendations made.	The student work has the following characteristics: • synthesis of ICT concepts and ideas to plan solutions to given ICT problems • production of solutions that address ICT problems • evaluation of problem-solving processes and solutions, and recommendations made.	The student work has the following characteristics: • listing of related ICT concepts and ideas to partially plan solutions to given ICT problems • production of responses that engage with ICT problems • description of problem-solving processes and solutions, and basic recommendations made.	The student work has the following characteristics: • collection of information related to planning solutions to given ICT problems • production of partial responses that engage with aspects of ICT problems • fragmented description of problem-solving processes and solutions, and statements of opinion made.

4 Glossary

Term	Explanation
A	
accurate	precise and exact; consistent with a standard, rule, convention or known facts
addresses	think about and begin to deal with (an issue or problem)
analyse; analysis	dissect data and information to ascertain and examine constituent parts and/or their relationships
applied learning	the acquisition and application of knowledge, understanding and skills in real-world and/or lifelike contexts
apply; application	use in a particular situation; make use of as relevant, suitable, or pertinent
aspect	a facet, phrase or part of a whole, therefore incomplete
aspects	components, elements
B	
basic	elementary, underdeveloped, simple and straightforward
C	
clear	easy to understand; fully intelligible; free from obscurity of sense
client brief	a succinct description of a problem that needs to be resolved after some analysis, investigation and research; usually identifies the scope, conditions, specifications, users, criteria, constraints, available resources, timeframe for the project and may include possible consequences and impacts; may contain an outline of the context and include a description of the needs of individuals or the community, or identified opportunities as well as criteria that apply to the problem; client briefs can vary in the amount of information they provide and the way information is presented
coherent	orderly, logical, and internally consistent relation of parts; rational with parts that are harmonious, well-structured and that make sense
collection	that which is collected; a set of objects, specimens, writings, etc., gathered together; a group of accumulated items
communicate	convey information, knowledge and/or understanding to others
community	in the context of this syllabus, includes the school community and the wider community beyond the school, including 'virtual' communities
community connections	authentic, real-world interactions that build students' awareness and understanding of life beyond school and support transition from school to community, industry, work and not-for-profit organisations
competent	able to do something well; having suitable or sufficient skill, knowledge, experience, etc., for the purpose; having the necessary ability, knowledge or skill to do something successfully; capable
complete	having all the necessary or appropriate parts

Term	Explanation
component	a part or element of a larger whole
comprehensive	detailed and thorough, including all that is relevant; inclusive of a broad coverage of facts, ideas and information
computer hardware	refers to the physical parts or components of a computer such as the monitor, mouse, keyboard, computer data storage, hard drive disk (HDD), system component (graphic cards, sound cards, memory, motherboard and chips), all of which are physical objects that can be touched
computer software	any set of machine-readable instructions that directs a computer's processor to perform specific operations; these instructions can be stored and run by hardware
concise	brief and to the point; without repetition of information, loss of clarity or logic of argument or solution
connections	associations, relationships
considered	formed after careful (deliberate) thought
convention	a rule, method, practice or procedure widely observed in a group, especially to facilitate social interaction, and established by general consent or usage
core	the common body of concepts, ideas, knowledge, understanding and skills that will support students' further learning and engagement within ICT contexts; in Information and Communication Technology, the core comprises of the three topics: Hardware, Software and ICT in society
Core Skills for Work (CSfW)	a set of knowledge, understanding and non-technical skills that underpins successful participation in work
creative	relating to or involving the use of the imagination or original ideas to create something
criteria	principles or standards by which something may be judged or decided; the teacher or students could develop criteria, e.g. meeting a client brief, specific needs, identified purpose, product quality, effectiveness of solution
D	
data	facts, figures, characters, images, symbols, statistics, numbers, records, documents, files and sounds that can be manipulated, stored and communicated by digital systems
demonstrate	to point out, indicate; to exhibit, set forth; to clearly and deliberately show
describe	give an account of characteristics or features; outline, state, provide details
description	account of characteristics or features
detailed	executed with great attention to detail
digital technology	any technology controlled by digital logic, including computer hardware and software, digital media and media devices, digital toys and accessories and contemporary and emerging communication technologies
discerning	showing good judgment to make thoughtful choices
discriminating	perceptive and judicious; making judgments about quality

Term	Explanation
E	
effectively; effectiveness	the degree to which something is successful in producing a desired result
efficient	well-organised and productive with minimal expenditure of effort; proficient and useful
electives	the contexts through which the three core life skills areas are explored
emerging	becoming apparent or prominent
engage	to attract and hold fast, e.g. to engage the attention; to engage someone's interest; to attract or please
evaluate; evaluation	assign merit according to criteria; examine and judge the merit, significance or value of something
explain	provide additional information that demonstrates understanding of reasoning and/or application
explain (to others)	presenting a meaning with clarity, precision, completeness, and with due regard to the order of statements in the explanation
explanation	a statement made to clarify something and make it understandable; a meaning or interpretation; a written or spoken text type or form which describes how something operates or why something happens
F	
fragmented	disorganised
functionality	design of products, services or environments to ensure they are fit for purpose and meet the intended need or market opportunity and identified criteria for success
I	
ICT in society	ICT in society comprises the concepts and ideas of health and safety when working with computers, ethical use, security and safety of the ICT user and how society is affected by the use of past, new and emerging ICT
ICT problem	a matter or issue to be solved or a task for which the student does not initially know what procedure to use to solve the problem; could be established and framed within a scenario, a client brief, an issue to examine or a task; an ICT problem will identify a set of criteria for success
idea	a thought or suggestion as to a possible course of action; conception, notion; a way of thinking
identify; identification	to distinguish, isolate; to locate and recognise
inconsistent	not in keeping; not in accordance; incompatible; incongruous; often lacking in structure; lacking in harmony between the different parts or elements; self-contradictory; lacking agreement, as one thing with another or two or more things in relation to each other; at variance
information	knowledge, evidence
information systems	the combination of digital hardware and software components (digital systems), data, processes and people that interact to create, control and communicate information

Term	Explanation
L	
language convention	an accepted language practice that has developed over time and is generally used and understood, e.g. the use of specific structural aspects of texts such as in report writing, where sections for introduction, background, discussion and recommendations are considered a language convention
language features	features or parts of a language system that support meaning, e.g. sentence structure, noun group/phrase, vocabulary, punctuation, figurative language; choices in language features and text structures together define a type of text and shape its meaning; these choices vary according to the purpose of a text, its subject matter, audience, and mode or medium of production
legal	related to, appointed or required by the law
list; listing	a number of connected items or names written or printed consecutively, typically one below the other
logical	rational and valid; internally consistent
M	
manage	to bring about or succeed in accomplishing; to take charge or care of; to handle, direct, govern or control in action or use
methodology	a system of methods used in a particular activity
minimal	small, the least amount, negligible
module of work	a module of work provides effective teaching strategies and learning experiences that facilitate students' demonstration of the dimensions and objectives as described in the syllabus A module of work: • draws from relevant aspects of the underpinning factors • identifies relevant concepts and ideas, and associated subject matter from the core topics • provides an alignment between core subject matter, learning experiences and assessment.
multimedia	the use of digital technologies to present text, graphics, video, animation and sound in an integrated way
multimodal	an assessment mode that uses a combination of at least two modes, delivered at the same time, to communicate ideas and information to a live or virtual audience, for a particular purpose; the selected modes are integrated to allow both modes to contribute significantly to the multimodal response
N	
numeracy	the use of mathematics to make sense of the world and the application of mathematics in a context for a social purpose; numeracy encompasses the knowledge, skills, behaviours and dispositions that students need to use mathematics in a wide range of situations

Term	Explanation
O	
operating system	software that communicates with the hardware and allows other programs to run
opinion	a view or judgment formed about something, not necessarily based on fact or knowledge
organise	systematically order and arrange
P	
partial	attempted, with evidence provided, but incomplete
peripheral device	digital components that can be connected to a digital system but are not essential to the system, e.g. printer, scanner, digital camera
plan	to arrange a plan or scheme for any work, enterprise or proceeding; to form a plan or project for a purpose
platform	a computer's operating system
plausible	credible and possible
practices	the customary, habitual, or expected procedure or way of doing of something
problem-solving	the process of finding solutions to difficult or complex issues
procedure	an established or official way of doing something
process	a series of actions or steps taken in order to achieve a particular result
produce	make or manufacture from components or raw materials
product	an assessment component of a project that results in the production of an item; one of the outputs of technologies processes, the end result of processes and production; products are the tangible end results of natural, human, mechanical, manufacturing, electronic or digital processes to meet a need or want
proficient	skilled and adept
project	the set of activities undertaken by students to address specified content, involving understanding the nature of problems, situations or needs; creating, designing and producing solutions to the project task and documenting the process; project work has a benefit, purpose and use; a user or audience who can provide feedback on the success of the solution; limitations to work within; and a real-world technologies context influenced by social, ethical and environmental issues; criteria are used to determine a project's success
protocols	generally accepted standards or communication 'rules' that govern relationships between and within information systems
purpose	the reason for which something is done or created or for which something exists

Term	Explanation
R	
range	the breadth of coverage, applicable to the context under study
reasoned	logical and sound; presented with justification
recommendation	a suggestion or proposal as to the best course of action
related	belonging to the same group, or type; connected
relevant	closely connected or appropriate to the matter in hand
responsible	having an obligation to do something, or having control over or care for someone or something, as part of one's job or role
rudimentary	simple or basic
S	
selection	the action or fact of carefully choosing someone or something as being the best or most suitable
service learning	a method of teaching that combines formal instruction with a related service in the community; integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and encourage lifelong civic engagement; students learn and develop through active participation in organised service that is coordinated with a school and conducted in, and meets the needs of, a community
simple	involving few elements, components or steps; obvious data or outcomes
solution	a means of solving a problem
statement	a sentence or assertion
successfully	having the intended result
suitability	right or appropriate for a particular person (client), purpose or situation
superficial	apparent and sometimes trivial
sustainable	supports the needs of the present without compromising the ability of future generations to support their needs
synthesise	combine elements (information/ideas/components) into a coherent whole
systematic	methodical, organised and logical
systems	the structure, properties, behaviour and interactivity of people and components (inputs, processes and outputs) within and between natural, managed, constructed and digital environments
T	
technical	requiring special knowledge to be understood
technology	materials, data, systems, components, tools and equipment used to create solutions for identified needs and opportunities, and the knowledge, understanding and skills used by people involved in the selection and use of these

Term	Explanation
thorough	attentive to detail; carried out completely and carefully; including all that is required
U	
unclear	not clear or distinct; not easy to understand; obscure
uneven	unequal; not properly corresponding or agreeing
unit	a unit is 55 hours of timetabled school time, including assessment. A course of study will usually be completed over four units (220 hours).
usability	able or fit to be used
use (n)	the act of using something; the state of being used; a way in which something is or can be used
V	
vague	couched in general or indefinite terms; not definitely or precisely expressed; deficient in details or particulars

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