



Computing Applications

**Content Endorsed Course
Stage 6**

Syllabus

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1 The Higher School Certificate Program of Study

The purpose of the Higher School Certificate program of study is to:

- provide a curriculum structure which encourages students to complete secondary education;
- foster the intellectual, social and moral development of students, in particular developing their:
 - knowledge, skills, understanding and attitudes in the fields of study they choose
 - capacity to manage their own learning
 - desire to continue learning in formal or informal settings after school
 - capacity to work together with others
 - respect for the cultural diversity of Australian society;
- provide a flexible structure within which students can prepare for:
 - further education and training
 - employment
 - full and active participation as citizens;
- provide formal assessment and certification of students' achievements;
- provide a context within which schools also have the opportunity to foster students' physical and spiritual development.

2 Rationale for Computing Applications in Stage 6 Curriculum

Computer-based technology is an integral part of contemporary society. This is reflected in daily activities carried out in contexts such as the workplace, education, entertainment, recreation and the home. In this course, students will participate in hands-on activities to develop skills, knowledge and understanding related to information and communication technologies so that they can participate confidently in these environments.

Computing Applications in Stage 6 has a role as a discrete subject for students who have had limited exposure to computers throughout their K–10 schooling. For some students this will be limited to the mandatory core of 50 hours computing in the Years 7–10 Design and Technology syllabus. Other mature age or overseas students may be entering school without a significant background in this area. It is these students for which the course is primarily described. In most cases, students who have studied the 7–10 Computing Studies elective in Years 9/10 will be more suited to one or more of the three new computing courses (Information Processes and Technology, Software Design and Development, and the Information Technology Framework) for their HSC.

Computing technology is a tool with the potential to enhance learning and engagement in a range of contexts. The choice of modules provided in this syllabus allows students to explore their own areas of interest and to develop specific skills in, and knowledge and understanding of, computer-based technology in those areas. Students' capacities in both information handling and the creative processes are enhanced when a variety of software applications are available to them.

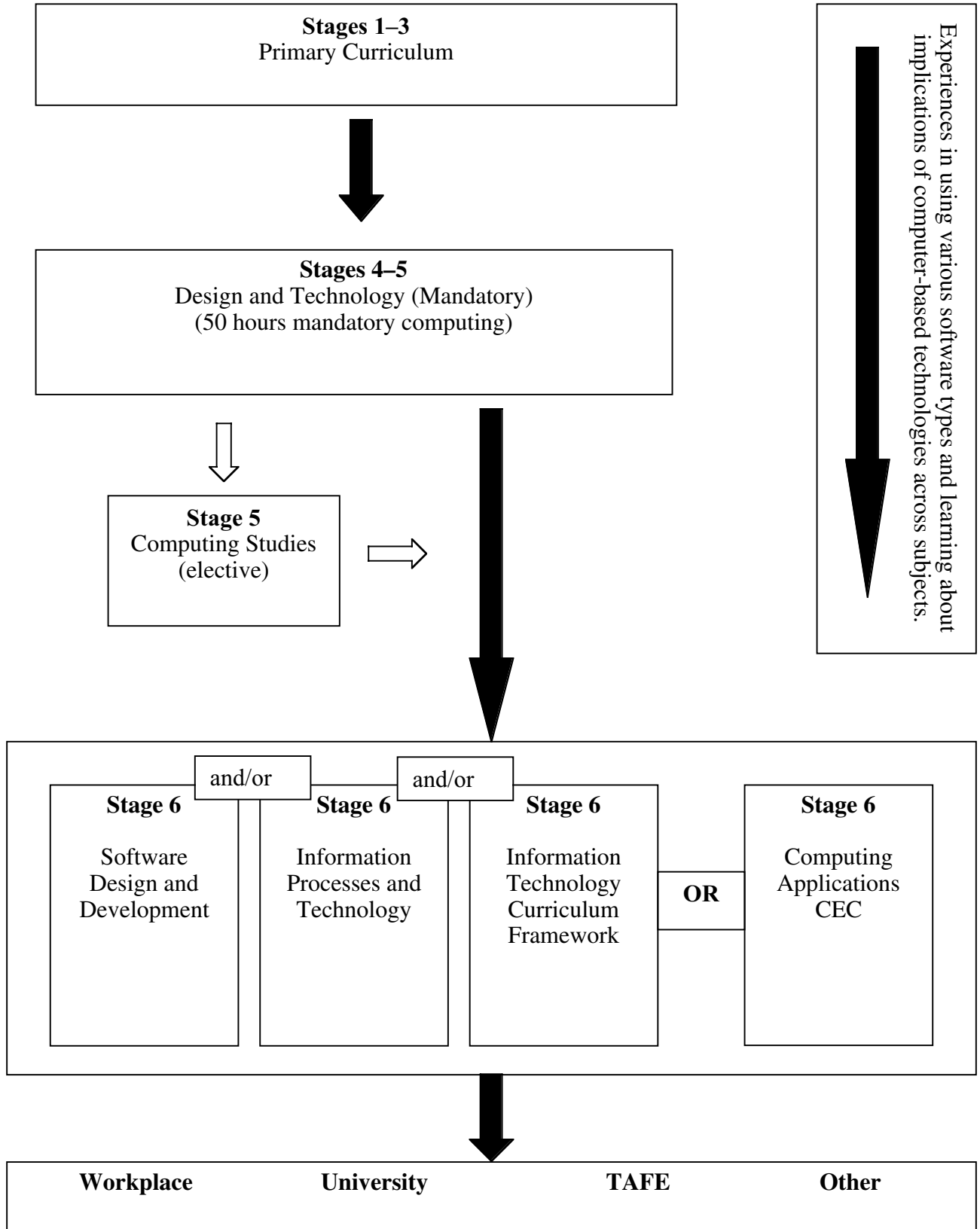
Students need an appreciation of the rapidly changing nature of the information technology landscape and of the need for the continuous development of skills to manage this change. They should also recognise the need for the development of critical thinking skills to enable them to make ethical decisions about current and emerging information and communication technologies. Each of the modules explores relevant historical and social issues so that students can be both reflective and forward-looking in their learning.

Communication of information does not occur out of context. Students are challenged to identify audience, purpose and cultural issues when selecting appropriate software and presentation modes.

Project work is integrated into the course and there are opportunities for individual and group projects in each of the modules. Project-based methodology is commonly used throughout the information and communication technology industries and students will emulate these approaches. The importance of project work is reinforced through a mandatory project assessment requirement.

This course will support students in developing a commitment to and capacity for lifelong learning in a range of areas. This may lead to further post-school study. For other students it will provide foundation learning that will be built upon through other life experiences and through personal interest.

3 Continuum of Learning for Students of Computing Applications Stage 6



4 Aim

The aim of Computing Applications Stage 6 is to develop students' capacity to be critical, ethical, competent and confident users of information and communication technologies in order to participate in a range of work, study and other life situations.

5 Objectives

Through the study of Computing Applications students will develop:

1. skills in, and understanding of, a range of computer software and related terminology
2. knowledge and understanding of the development of computer-based systems, their operations and functions
3. skills in demonstrating the methods, processes and application of project management techniques to solve problems in a range of contexts
4. knowledge and understanding of the ethics of current and emerging computer-based technologies and their effects on society
5. skills in critical evaluation of the appropriateness of computer software in a variety of contexts.

6 Course Structure

Computing Applications consists of 12 modules which may be studied as either 15-hour or 30-hour modules. Modules should be selected to provide a course that will meet students' specific needs and interests.

Module 1 – Hardware and Software Skills provides an opportunity to assess student's understanding and skills and is therefore advised as an introductory module. It is also expected that where two modules of the same title are mentioned, Module I is taught first. For example, Graphics I precedes Graphics II.

Units and Years of Study	Number of Hours	Preliminary / HSC
1 unit / 1 year	60	60 hours Preliminary or 60 hours HSC
1 unit / 2 years	120	60 hours Preliminary plus 60 hours HSC
2 units / 1 year	120	120 hours Preliminary or 120 hours HSC
2 units / 2 years	240	120 hours Preliminary plus 120 hours HSC

A range of 15-hour and 30-hour module combinations may be offered within either a 60-hour, 120-hour or 240-hour course:

Course	Example 1	Example 2	Example 3
60 hours	4 x 15 hour	2 x 30 hour	1 x 30 hour 2 x 15 hour
120 hours	4 x 30 hour	2 x 30 hour 4 x 15 hour	3 x 30 hour 2 x 15 hour
240 hours	120 hours Preliminary: 4 x 15 hours, 2 x 30 hours 120 hours HSC: 2 x 15, 3 x 30 hours		

7 Project Requirements

It is a basic course requirement that individual and/or group project work must form part of the teaching and learning program. It is highly recommended that project work be integrated throughout modules; however, it is a minimum requirement that a project forms a significant part of at least one module.

It is expected that students will develop knowledge, understanding and skills in project work sufficiently early in the course to complete the mandatory requirement of at least one project. It is expected that students will demonstrate the relevant Key Competencies (8.2) in the context of their project.

The capacity to undertake the mandatory project will be enhanced when students have access to deeper understanding and skills in an area by completing both related modules, eg Graphics I and II.

Key aspects of project work to be covered include the following:

- Project management
 - development of project plans including tasks, schedule and budget
 - documentation of project plans
 - communication skills including written and oral communication with key stakeholders
- Social and ethical considerations
 - identification of major social and ethical issues that relate to the chosen project and its phases
- Problem-solving
 - identification and definition of the problem
 - identification of available resources to assist in solving the problem
 - analysis of options
 - development of a prototype to test and demonstrate the solution
 - ongoing evaluation
- Decision-making
 - based on a range of criteria including:
 - project specifications
 - economic feasibility
 - technical feasibility
- Designing solutions
 - consideration of a number of possible solutions
 - consultation with key stakeholders in the development of the solution
- Implementation
 - an implementation plan that details:
 - participant training if required
 - timeline for implementation
 - resource requirements
- Testing, evaluating and maintaining
 - in relation to compliance with the original specifications
 - effectiveness of the solution
 - recommendations for improvement.

8 Objectives and Outcomes

8.1 Table of Objectives and Outcomes

Objectives	Outcomes
<p>Students will develop:</p> <ol style="list-style-type: none"> 1. skills in the use and understanding of a range of computer software and related terminology 	<p>A student:</p> <ol style="list-style-type: none"> 1.1 describes the function and application of a variety of computer software 1.2 applies computing terminology appropriately in practical situations 1.3 uses appropriate computer software in a given context
<ol style="list-style-type: none"> 2. knowledge and understanding of the development of computer-based systems, their operations and functions 	<ol style="list-style-type: none"> 2.1 describes aspects of human activity which have developed into computer applications 2.2 explains the principles and functions of specific hardware components 2.3 evaluates the suitability of hardware in a particular context
<ol style="list-style-type: none"> 3. skills in demonstrating the methods, processes and application of project management techniques to solve problems in a range of contexts 	<ol style="list-style-type: none"> 3.1 applies a range of project management techniques in the development of a solution 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions 3.3 implements, tests, debugs and evaluates solutions using current common application packages
<ol style="list-style-type: none"> 4. knowledge and understanding of the ethics and impact of computer-based technology and emerging trends on society 	<ol style="list-style-type: none"> 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software 4.2 evaluates the use of a computer-based solution compared to non-computer solutions 4.3 identifies social and ethical issues related to the use of computer software
<ol style="list-style-type: none"> 5. skills in critical evaluation of the appropriateness of computer software in a variety of contexts 	<ol style="list-style-type: none"> 5.1 evaluates the suitability of software applications in a particular context

8.2 Map of Outcomes and Modules

Outcomes	Related Modules												
	1	2	3	4	5	6	7	8	9	10	11	12	
A student:													
1.1 describes the function and application of a variety of computer software	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	
1.2 applies computing terminology appropriately in practical situations	✓	✓	✓	✓		✓	✓	✓	✓		✓		
1.3 uses appropriate computer software in a given context	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
2.1 describes aspects of human activity which have developed into computer applications	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	
2.2 explains the principles and functions of specific hardware components	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	
2.3 evaluates the suitability of hardware in a particular context			✓		✓	✓	✓	✓	✓	✓	✓	✓	
3.1 applies a range of project management techniques in the development of a solution			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
3.3 implements, tests, debugs and evaluates solutions using current common application packages					✓					✓			
4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
4.2 evaluates the use of a computer-based solution compared to non-computer solutions		✓			✓			✓			✓	✓	
4.3 identifies social and ethical issues related to the use of computer software			✓		✓	✓	✓	✓	✓	✓	✓	✓	
5.1 evaluates the suitability of software applications in a particular context	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	

8.3 Key Competencies

Computing Applications Stage 6 provides an extensive range of opportunities and contexts in which students can develop competencies considered essential for further education, work and fulfilment as members of Australian society.

The following key competencies have been embedded in the Computing Applications Stage 6 Syllabus. These competencies are seen as essential components to enhance student learning and hence form an important part of this syllabus.

Collecting, analysing and organising information

Students use a range of software to access information, and may choose to use a range of data sources including CD-ROMs, the internet, email and databases. Applications such as spreadsheets and databases enable the development of analytical skills and the arrangement of this data for specific uses. Through project work, students develop skills in collecting, extracting and interpreting information from a variety of sources.

Communicating ideas and information

Computer technology is a tool that assists in the communication process. It does not replace the need for skills in communication. Students are encouraged to consider audience, purpose and cultural considerations when selecting appropriate means of communication. They use graphics, word processing, desktop publishing and multimedia where appropriate to ensure clear representation of ideas and data.

Using technology

This competency is embedded throughout the course. Students learn through practical participation the operation of computer hardware and the use of software packages. They develop an awareness of the wide-ranging uses and potentials for computing applications in all facets of life.

Planning and organising activities

Students are faced with a range of opportunities to develop management skills. Through individual and group projects, students learn how to allocate resources, sequence activities and share responsibilities in order to achieve defined objectives.

Working with others and in teams

Students are expected to work individually and as members of groups to develop a collaborative understanding of the main concepts. Leadership and teamwork skills play a large role as students are required to work together to design and develop new solutions and to evaluate existing solutions.

Using mathematical ideas and techniques

Students collect and analyse data in order to present information. The use of charts, graphs, surveys and other analytical tools is required to demonstrate not only problem-solving skills but also understanding of the concepts behind project work. Students will also develop these concepts through the use of Gant charts and other project management techniques.

Solving problems

The application of problem-solving is embedded throughout all modules. Students examine the potential uses of computer-based technology in analysing situations and in exploring options for appropriate solutions.

9 Modules

1. Hardware and Software Skills
2. Graphics I
3. Graphics II
4. Spreadsheets I
5. Spreadsheets II
6. Desktop Publishing I
7. Desktop Publishing II
8. Databases
9. Communications I
10. Communications II
11. Multimedia I
12. Multimedia II

Module 1: Hardware and Software Skills

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

This module is designed for students who require an introduction to the basic terminology, concepts and operations needed for success in this course. This module covers basic system software and application software operation and the operation of hardware. Students also investigate safe practices in the operation of computer systems.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 1: Hardware and Software Skills

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • basic hardware and software including: <ul style="list-style-type: none"> - basic terminology - computer hardware features including central processing unit operation and interconnected components - software components such as backup procedures, systems and application software - environment, input-process-output concepts - basic keyboard and mouse use and development of keyboard skills, layouts and their use - menus and entering commands - use of folders and files including formatting, copying and deleting - use of peripheral devices including printers, loading and adjusting paper - use of storage devices, including floppy disks, ZIP disks, CD-ROMS, DVDs - applications packages at an introductory level including word processing, databases and spreadsheets - hardware manuals, software manuals and other help procedures - networking equipment • care and maintenance of a computer system • digital representation of data • computer systems from an historical perspective • social issues of: <ul style="list-style-type: none"> - information privacy - appropriate communication of information - computer security - ethics - ergonomics - nature of work 	<ul style="list-style-type: none"> • switch the computer on/off, boot the system, and access software • perform a range of basic hardware and software operational skills • select appropriate applications packages and commands to complete a variety of simple tasks • carry out basic maintenance procedures for computer systems • identify how data is represented in a digital form • develop a timeline and identify key milestones in the historical development of computers systems. • evaluate ergonomic qualities of workstation design and work practices • identify software security and copyright issues and their implications for the user • use computer technology to enhance interpersonal communication

Module 2: Graphics I

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

In this module, students explore ways to generate and edit computer graphics and investigate how they can be applied in a variety of environments. The application of graphics in areas including publishing, entertainment, education, fashion and advertising are discussed. Students compare traditional graphics methods with computer-based techniques.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.2 evaluates the use of a computer-based solution compared to non-computer solutions
- 5.1 evaluates the suitability of software applications in a particular context

Module 2: Graphics I

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • graphics terminology including pixels, screen and printer resolution • input and output devices — including keyboard, mouse, scanner, graphics tablet, trackball, monitors, impact and non-impact printers and plotters, use of Postscript • paint (bit-mapped) graphics and draw (vector or object) graphics • non-computer methods used prior to development of appropriate software and hardware • graphics techniques including: <ul style="list-style-type: none"> - use of alignment grids to position objects - magnifying parts of the screen to work in detail - copying objects, shading and fills - moving and resizing objects - use of layers - transforming objects (rotating, flipping, distorting, adding perspective), - Beziér curves and colour palettes - objects (eg text) flowing around curves - grouping objects • clip art and scanned images <ul style="list-style-type: none"> - modification of these and other pre-existing designs • history of graphics, copyright, privacy and security <ul style="list-style-type: none"> - graphics from existing libraries - scanned images - personal graphics use versus business graphics use - use of recognisable images 	<ul style="list-style-type: none"> • use graphics terminology appropriately when expressing ideas and concepts about applying graphic design features • select devices for input and output of graphic designs • apply knowledge of the relationship between screen and printer resolution to a variety of given tasks • create, scan and edit images in both Paint and Draw programs • compare Paint and Draw graphics formats to identify the most appropriate for a variety of different functions • evaluate the role of non-computer methods in the development of computerised graphic images • design and produce graphics images for a specific purpose using a range of graphics techniques • identify and make decisions about the relationship between colour palettes, depth and file size in a given context • make changes to graphic designs including modifying an image and creating a new image • apply a systematic approach to the creation of a graphic • document the process involved in the creation of a graphic design • scan at different resolutions and bit depth for a variety of purposes • debate the issues of copyright, security and privacy in relation to users • research the use of graphics prior to computer usage.

Module 3: Graphics II

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

This module builds on the knowledge, understanding and skills developed in the prerequisite module Graphics I.

In this module, students expand and enhance their skills in graphical design and find solutions through their own ingenuity. They are also encouraged to experiment with a variety of relevant graphics packages. They select appropriate software and hardware for given problems. Students assess the impact of computers in this field.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 3: Graphics II

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • printer type, resolution and use for image production • storage media including <ul style="list-style-type: none"> - floppy disk, hard drives, CD, DVD, zip and jaz drives and the related capacity for graphical images and methods of image distribution • size considerations, including compression techniques such as JPEG and GIF • colour and 3D effects to enhance graphics <ul style="list-style-type: none"> - use of advanced techniques to produce 3D models - applying lighting and shadowing techniques to produce realistic images - experimenting with modeling and rendering techniques - aesthetic considerations in design work including avoiding cluttering, and appropriate colour combinations • developing and refining ideas from concept to final graphic design • historical changes in graphical techniques using design principles • social issues <ul style="list-style-type: none"> - increased productivity through the use of computer-aided techniques, - high quality artwork can be produced by far more people now - copyright and artists work 	<ul style="list-style-type: none"> • select appropriate software and hardware to complete specific graphics tasks • select appropriate graphics techniques for the design and production of hard copy, with consideration of printer limitations and paper type • manage the storage of graphic solutions in an appropriate storage media • select an appropriate media for distribution of the final graphic product • explain how data is represented in digital form on storage media • select and use appropriate file types for a large graphic, both photograph and block diagram • apply a range of colour and 3D effects to graphics production • document the processes involved in the creation of a graphics product • identify changes in the design and graphics fields brought about through the use of computers • appreciate that the use of computer technologies has reduced the time involved in producing image variations for clients • identify changing employment opportunities resulting from increasing computer use in graphic design

Module 4: Spreadsheets I

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

In this module, students are introduced to the use of spreadsheets for manipulating and presenting numerical data. Students become familiar with the purpose and basic functions of the spreadsheet and develop skills in operating spreadsheet software. Students explore the effects of spreadsheets on the daily operation of the workplace.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 4: Spreadsheets I

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • spreadsheet concepts including <ul style="list-style-type: none"> - row, columns, cell address - values, labels, formulas, use of functions including sum, average, count - moving/copying cell contents with relative and absolute references - template design using a modular approach - sorting - macros - Vlookup, hlookup & lookup - linking worksheets - protection of worksheets • spreadsheet design principles including <ul style="list-style-type: none"> - identifying input, output, calculation and instruction areas - using a template design for a given context - spreadsheets for personal and business usage - using templates to solve problems • the use of ‘what-if’ analysis to provide several solutions for a given context • basic tools to <ul style="list-style-type: none"> - present graphs displaying the results of data displayed - calculate trends - graphically display of information • integrating a spreadsheet into other software applications including presentation and word processing software • identifying the historical development of spreadsheets including specific mention of Visicalc as first computerised spreadsheet, and its effect on the market • the uses and social implications of computerised spreadsheets: <ul style="list-style-type: none"> - where, how and why they are used, and the effects they have had - where work patterns and practices have been affected by spreadsheets 	<ul style="list-style-type: none"> • use specific spreadsheet terminology correctly • use basic formulas, standard functions, ‘if’ and ‘lookups’ in manipulating a spreadsheet • analyse data entered through linked worksheets, use of macros and sorting data functions • apply basic design principles to the creation of a spreadsheet • model a simple situation and use analysis methods to identify changes • create a spreadsheet to identify trends in a given context • present spreadsheet data in a graphical form such as charts and graphs • import spreadsheets into other software applications • document the process involved in the creation of a spreadsheet • research and record key events in the history of spreadsheet development since the introduction of personal computers, and its effect on the PC market • describe the social changes that have occurred in relation to computerised spreadsheets

Module 5: Spreadsheets II

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

This module builds upon the knowledge, understanding and skills developed in the prerequisite module Spreadsheets I.

In this module, students will explore the many uses of graphs and charts to present data from a spreadsheet. They will develop skills in analysing, presenting and representing data in numerical and graphical form. They will also look at the effects of possible misrepresentation of data in charts and the misuse of chart techniques.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 3.3 implements, tests, debugs and evaluates solutions using current common application packages
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.2 evaluates the use of a computer-based solution compared to non-computer solutions
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 5: Spreadsheets II

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • hardware for spreadsheet use including the requirements for memory and storage capacity • the anatomy of a chart <ul style="list-style-type: none"> - chart elements; - dependent/independent variables - data series - labels, axes and scales • types of charts <ul style="list-style-type: none"> - column, bar, line - pie, area, scatter - bubble, combination • spreadsheets to generate suitable graphs for analysis, including <ul style="list-style-type: none"> - simulations - ‘what if’ predictions - comparisons - trends and relationships including price sensitivity - break-even analysis - visual accounting reports - relationships between mathematical functions • misleading representation of information <ul style="list-style-type: none"> - dual and misleading scales - improper or misleading labels • hard copy production of reports using overhead transparencies and slides • presentation principles and features of audience, simplicity, independent charts • privacy and security issues • copyright issues <ul style="list-style-type: none"> - use of clipart 	<ul style="list-style-type: none"> • identify changes in hardware and software requirements since the introduction of graphing and chart tools • design a spreadsheet that displays numerical data to show a trend in a given context • select and construct appropriate charts and explain why they are suitable for the data given and the analysis required • identify a method using a chart to demonstrate scheduling of activities • specify categories and variables within a spreadsheet for graphing • organise data in a spreadsheet to make it easier to graph • employ analysis methods for charts which illustrate trends or demonstrate results • produce graphs that illustrate a concept • incorporate graphics and charts to illustrate reports and other applications • incorporate spreadsheets and charts into a computer-based presentation • document the process involved in the creation of a spreadsheet • analyse the effects of incorrect information entered in a spreadsheet and inappropriate display formats • produce specified hard copies of analysis reports generated • apply presentation principles in the development of reports <ul style="list-style-type: none"> - explain why privacy and security issues are important in presenting information through graphs • discuss authorship in relation to the use of clipart

Module 6: Desktop Publishing I

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

In this module, students are introduced to basic skills in desktop publishing including text and graphic manipulation to enhance document production. Students develop skills in creating and working with documents including the use of advanced word processing features.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 6: Desktop Publishing I

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • terminology in desktop publishing • the use of word processing compared to non-computer-based methods • hardware requirements for desktop publishing • screen display and resolution • peripheral devices needed for the software • input and output devices including printer and disk drive • creating a document <ul style="list-style-type: none"> - new files, table of contents, index, tracking changes, saving documents, previewing and printing documents • working with an existing document <ul style="list-style-type: none"> - formatting: fonts, style, justification - spacing including leading and kerning - deleting, copying, moving, pasting, finding and replacing text - using a spell checker, grammar checker, thesaurus - master pages and templates, header/footer options - use of footnotes • basic desktop publishing using word processor advanced features <ul style="list-style-type: none"> - importing/exporting from other applications - multi-column documents - positioning of graphics and text - text wrap, paragraph borders and page borders • historical development of word processing • copyright issues relating to desktop publishing 	<ul style="list-style-type: none"> • use basic terminology appropriately • analyse the advantages and disadvantages of the word processor as a tool • identify minimum and optimum hardware requirements for software • relate screen display and resolution to the appearance of text and graphics on the screen • use a range of input and output devices for specific tasks • use basic commands to create new and to modify existing files • create specialised documents including applications for employment, business letters and forms • design, modify and use documents with master pages and templates • produce multi-column documents • import text from other applications and format according to document requirements • export a variety of text documents to be used in other applications • select and use advanced features to format a document with text and graphics • document the process involved in the creation of a desktop-published document • appreciate the historical development of word processing • discuss changes in the workplace that have occurred due to word processing, for example telecommuting, management involvement, employment changes for administrative staff and/or personal assistants • investigate copyright in relation to desktop publishing

Module 7: Desktop Publishing II

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

This module builds on the knowledge, understanding and skills developed in the prerequisite module Desktop Publishing I.

In this module, students use desktop publishing packages to explore the production and presentation of printed material. They further develop skills of data manipulation and incorporation of scanned images to produce high quality hard copy output suitable for publication or presentation purposes.

Outcomes

A student:

- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.3 identifies social and ethical issues related to the use of computer software

Module 7: Desktop Publishing II

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • additional desktop publishing terminology and features <ul style="list-style-type: none"> - fonts (type, style, size) - use of alignment grids - master pages - text and graphics frames - importing text and graphics - converting text formats - margins and gutters - headers and footers - leading, kerning - stretching of text - alignment and justification of text - hyphenation - effective use of white space and borders • use of graphics to enhance text <ul style="list-style-type: none"> - graphics file formats - the importance of graphics - types of graphics including clip art - scanned images - grayscale, black and white and colour graphics - text wrapping around graphics • input/output devices including <ul style="list-style-type: none"> - keyboards, modems - high resolution printers (eg inkjet, laser) - typesetting machines - page description languages (eg Postscript) • page layout conventions and aesthetic issues including <ul style="list-style-type: none"> - overuse of colour and fonts • combining information from a range of applications to produce a document including graphs from spreadsheets and information from a database • social issues <ul style="list-style-type: none"> - enhancement in communications ability - increased empowerment and equity through increased use and general availability of this technology - in-house production of publications - impact on printing industry 	<ul style="list-style-type: none"> • design and produce formatted documents, for example <ul style="list-style-type: none"> - an advertising flyer - a newsletter/magazine - a tri-fold brochure • perform a comprehensive range of text-based operations • organise imported data in an appropriate format • incorporate scanned images and clip art using different graphic file formats and existing word processed material into documents • prepare a final presentation using an appropriate output device in either colour or black and white • select appropriate input and output devices for graphic production • identify and describe the functions of an office or publishing house where desktop publishing is taking place • apply industry conventions and understanding of aesthetics in document design • set up different source documents for a mail merge • insert graphs from a spreadsheet and report from a database into a desktop publishing document • identify how desktop publishing can empower and provide equity for the individual

Module 8: Databases

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

In this module, students learn to appreciate that computer database systems have a capacity to store, retrieve and manipulate data better than non-computer systems. Students will develop skills in modifying existing databases, designing new databases for specific purposes and using databases to produce documents such as letters. Students reflect on the impact of this technology, and on relevant social issues including privacy, freedom of information, and data security.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.2 evaluates the use of a computer-based solution compared to non-computer solutions
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 8: Databases

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • hardware and software requirements • peripheral devices needed for the software and storage of the data <ul style="list-style-type: none"> - disk, CD-ROM, DVD - printer, screen • database skills including: <ul style="list-style-type: none"> - database management system - sorting and selecting records - creating and printing reports - searching a database using a query language - displaying in form and list view - selection of fields to display - query by example • researching examples of database use in the real world such as the Roads and Traffic Authority, Police and Library catalogues • processes involved in creating a relational database <ul style="list-style-type: none"> - schema - tables • merging databases with other applications including mail merge • historical development of databases • computerised databases including the White Pages • non-computerised databases including <ul style="list-style-type: none"> - traditional card system in libraries • database issues <ul style="list-style-type: none"> - data accuracy - privacy - data security - freedom of information 	<ul style="list-style-type: none"> • identify the minimum hardware requirements for software • perform methods of storing, retrieving and printing databases using peripheral devices • use basic terminology correctly • distinguish between types of data, including numerical data and graphics • construct, create and describe the limitations of a flat file database to record and analyse survey results • evaluate database design using test data • modify an existing database to reflect changes • describe the main features of an existing relational database and its main uses • create a relational database for a given context • document the process involved in the creation of a database report • create a document for mail merging and print the results • identify situations where computerised and non-computerised databases are used • compare computerised and non-computerised databases • identify the social issues that will affect the accuracy of data and the information obtained

Module 9: Communications I

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

In this module, students develop an understanding of communications as a transfer of data or information from one location (eg sender, source or originator) to another (destination, receiver). Students develop understanding of how data communication is changing and the ways in which society is storing, accessing, using and exchanging information. They develop practical skills in the development, use and maintenance of communications systems.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 9: Communications I

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • essential elements of communications <ul style="list-style-type: none"> - hardware required <ul style="list-style-type: none"> - modem, terminal, data link - software required <ul style="list-style-type: none"> - log-on procedures • terminology <ul style="list-style-type: none"> - protocol and ‘handshaking’ - dial up - network - synchronous and asynchronous - parity • methods of connection <ul style="list-style-type: none"> - modem, microwave, satellite, ISDN, phone line, co-axial cable, fibre optics, cable modem, ADSL • hardware and software associated with communications via the internet <ul style="list-style-type: none"> - browsers and search engines • hardware and software associated with communications via phone links <ul style="list-style-type: none"> - shared lines and switched lines • data representation <ul style="list-style-type: none"> - digital/analog, ASCII, data conversion, encryption, encoding for email • current technology and applications of <ul style="list-style-type: none"> - voice mail and facsimile, videoconferencing/ teleconferencing, telecommuting, file transfer protocol • networks <ul style="list-style-type: none"> - local area network (LAN) and wide area network - LAN topologies and standards including ethernet, token ring, cabling standards - collision detection and correction methods within a local area network • history of electronic communications • social and ethical issues <ul style="list-style-type: none"> - privacy - security 	<ul style="list-style-type: none"> • describe the function of the essential elements of communications • apply terminology appropriately in a given context • describe methods of connection and how they are used • identify hardware needed to use a browser and search engine to locate required information • describe significance of the conversion of analog data to digital data and vice versa • convert text data into ASCII format to explain how data is represented • diagrammatically represent the process in each current technology • describe the features of current trends in communications • transmit and receive files across a network and the internet • diagrammatically represent the three topologies commonly used in networking • identify the collision detection and avoidance methods used in networks • define the difference between ethernet and token ring protocols • research the origins of electronic communications and develop a timeline of this change • identify and discuss the implications of email as a corporate tool including privacy and security • investigate methods of using communications in commerce, education, home, government and defence

Module 10: Communications II

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

This module builds upon the knowledge, understanding and skills developed in the prerequisite module Communications I.

In this module, students use the necessary tools to develop a complete website solution. Students investigate quality design practices through an exploration of existing websites and other media. Students use different methods designing websites including pre-designed software and HyperText Markup Language and Java.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 3.3 implements, tests, debugs and evaluates the solution using current common application packages
- 4.1 identifies and reflects on the social and technological implications when making decisions about computer software
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 10: Communications II

Students learn about:	Students learn to:
<ul style="list-style-type: none"> ● hardware and software requirements <ul style="list-style-type: none"> - modem - web-based software - search engines - browsers - internet service providers ● graphic file formats and their advantages and disadvantages within webpages ● inclusion of audio and video into webpages ● aesthetic considerations including <ul style="list-style-type: none"> - avoiding cluttering - poor colour combinations - appropriate placement of links - font size, style and colour - background designs - graphic placement - design for different platforms - design for data input - ease of navigation - use of storyboards - audience suitability ● communication speed in relation to design and appearance especially in relation to graphic formats ● website production ● use of programming languages and encryption techniques ● history of the World Wide Web ● World Wide Web issues and access <ul style="list-style-type: none"> - privacy - security - copyright issues - validity of information - access to inappropriate information 	<ul style="list-style-type: none"> ● identify minimum hardware requirements for software ● select appropriate software applications for a given context ● design a website for a particular context including documentation of design issues and design specifications ● compare and contrast HyperText Markup Language with webpage development applications ● identify basic graphic file formats and describe the advantages and disadvantages of each type for communicating ● identify audio and video formats suitable for webpages ● apply aesthetic considerations and design principles in the production of documents and communications ● select appropriate graphic formats to suit the audience and hardware/software profiles ● research alternative methods of producing websites ● identify and describe examples of methods of securing websites through encryption ● research and record a brief history of webpage development and usage ● investigate the historical basis of web design and construct a timeline of this development ● research the emergence of the internet ● debate World Wide Web usage and issues in relation to chat rooms ● research the emergence of e-business methods and how they have impacted on communications

Module 11: Multimedia I

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

In this module, students investigate the effects of hypermedia on the communication, presentation and manipulation of information. They gain an understanding of, and experience in, developing solutions to problems using this technology.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.2 applies computing terminology appropriately in practical situations
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.2 evaluates the use of a computer-based solution compared to non-computer solutions
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 11: Multimedia I

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • terminology <ul style="list-style-type: none"> - text - hypertext - audio (sound and music) - graphics - animation - video • hardware and software requirements <ul style="list-style-type: none"> - slide shows - development tools • design criteria <ul style="list-style-type: none"> - content - consistent appearance of screens - use of navigational aids - legibility - relevance to audience • information structures and storyboarding <ul style="list-style-type: none"> - linear/non-linear - network - hierarchical • basic animation techniques <ul style="list-style-type: none"> - cel-based - path-based - incorporation of sound and music • social issues of multimedia • history of multimedia 	<ul style="list-style-type: none"> • use terminology appropriately for a given context • identify the minimum hardware requirements for software packages • select appropriate software applications for a given context • investigate and identify the necessary hardware and software requirements to create multimedia sequences • design a simple slide show and/or web-based presentation • document stages of development • apply design criteria associated with hypermedia to the production of a storyboard to be used in an animation sequence • use storyboards to represent, plan and track the progress of a presentation • document the process involved in the creation of a multimedia production • develop an animation sequence • distinguish between cel-based and path-based animation • record and manipulate sounds and music and incorporate these into an animated sequence • research the social aspects that need to be considered in the production of a multimedia production • research copyright issues related to multimedia presentations • create a timeline of the evolution of multimedia and identify key developments • research the changing methods for displaying information

Module 12: Multimedia II

Indicative Hours: 15-hour or 30-hour module depending on depth taught

Description

This module builds on the knowledge, understanding and skills developed in the prerequisite module Multimedia I.

In this module, students develop skills in analysing a range of multimedia examples such as television production, commercials, and video and music clips. Computers are used to manipulate images, create animations and to control the editing process. Students have the opportunity to design and make an animation or video.

Outcomes

A student:

- 1.1 describes the function and application of a variety of computer software
- 1.3 uses appropriate computer software in a given context
- 2.1 describes aspects of human activity which have developed into computer applications
- 2.2 explains the principles and functions of specific hardware components
- 2.3 evaluates the suitability of hardware in a particular context
- 3.1 applies a range of project management techniques in the development of a solution
- 3.2 analyses and documents the steps involved in problem-solving and applies them to producing computer-based solutions
- 4.1 identifies and reflects on the social and technological implications when making decisions about the use of computer software
- 4.2 evaluates the use of a computer-based solution compared to non-computer solutions
- 4.3 identifies social and ethical issues related to the use of computer software
- 5.1 evaluates the suitability of software applications in a particular context

Module 12: Multimedia II

Students learn about:	Students learn to:
<ul style="list-style-type: none"> • animation process <ul style="list-style-type: none"> - cel animation - tweening - morphing - warping - 3D modeling and rendering • principles of using computer graphics in animation <ul style="list-style-type: none"> - sequence - appropriateness of graphics chosen - layout of animation sequence - size requirements • video digitising, manipulation, processing, storage and distribution <ul style="list-style-type: none"> - differences between analog and digital video methods - video editing and titling with appropriate software and hardware - selecting appropriate methods to store and playback animation or video sequence - storage media and method of distribution - inclusion of transitions, sound and text • copyright issues for digitised media storage and distribution • the emergence of Digital Versatile Disk (DVD) technology and its impact on the multimedia industry • the history of multimedia • non-entertainment applications of computer animation <ul style="list-style-type: none"> - simulators - virtual reality - visual representation of data - education 	<ul style="list-style-type: none"> • identify and use a suitable hardware/software combination to create an effective animation • incorporate animation into a video sequence or digital recording • apply the principles of using graphics in animation to a variety of tasks • demonstrate and document the sequencing of activities that occur in the process • use appropriate hardware/software combinations to shoot and edit a video • identify a suitable hardware/software combination to add titles to a video • describe the advantages and disadvantages of digital and analog video • use suitable hardware/software combinations to make digitally recorded sequences • analyse the implications for copyright on digitised media • research the impact, use and emergence of DVD in the film and music industry • develop a timeline showing the emergence and development of animation • document the process involved in the creation of a multimedia production • compare and contrast non-entertainment applications of computer animation

10 Post-school Opportunities

The study of Computing Applications Stage 6 provides students with knowledge, understanding and skills that form a valuable foundation for a range of courses at university, other tertiary institutions and private providers.

In addition, the study of Computing Applications Stage 6 assists students to prepare for employment and full and active participation as citizens. In particular, there are opportunities for students to gain recognition in vocational education and training. Teachers and students should be aware of these opportunities.

Recognition of Student Achievement in Vocational Education and Training (VET)

Wherever appropriate, the skills and knowledge acquired by students in their study of HSC courses should be recognised by industry and training organisations. Recognition of student achievement means that students who have satisfactorily completed HSC courses will not be required to repeat their learning in courses in TAFE NSW or other Registered Training Organisations (RTOs).

RTOs, such as TAFE NSW, provide industry training and issue qualifications within the Australian Qualifications Framework (AQF).

The degree of recognition available to students in each subject is based on the similarity of outcomes between Higher School Certificate courses and industry training packages endorsed within the AQF. Training packages are documents that link an industry's competency standards to AQF qualifications. More information about industry training packages can be found on the National Training Information Service (NTIS) website (www.ntis.gov.au).

Recognition by TAFE NSW

TAFE NSW conducts vocational education and training courses in an extensive range of industry areas and in general education for prevocational and foundation purposes. The details of TAFE courses are published annually in the TAFE NSW Handbook and are available on the internet at www.tafensw.edu.au

Details of HSC/TAFE credit transfer arrangements are updated regularly on the HSC/TAFE Credit Transfer website (www.tafensw.edu.au/hsctafe). Details of credit transfer arrangements between HSC Content Endorsed Courses and TAFE NSW are published on the website when the credit transfer arrangements are endorsed by TAFE NSW Educational Services Divisions and the Board of Studies.

Teachers should refer to the HSC/TAFE Credit Transfer website and be aware of recognition available to their students through the course of Computing Applications.

Recognition by other Registered Training Organisations

Students may also negotiate recognition into a training package qualification with another Registered Training Organisation. Each student will need to provide the RTO with evidence of satisfactory achievement in Computing Applications CEC Stage 6 so that the degree of recognition available can be determined.

11 Assessment and Reporting of Stage 6 Content Endorsed Courses

Requirements and Advice

The information in this section of the syllabus relates to the Board of Studies' requirements for assessing student achievement in the Content Endorsed Courses for the Higher School Certificate.

Assessment is the process of gathering information and making judgements about student achievement. It can be done for a variety of purposes including:

- to assist student learning
- to evaluate and improve teaching and learning programs
- to provide evidence of satisfactory achievement and completion in the Preliminary course
- to provide the Higher School Certificate results.

Assessment of Stage 6 Content Endorsed Courses

There are no external examinations of students in Stage 6 Content Endorsed Courses.

Assessment provides a measure of a student's achievement based on the range of syllabus content and outcomes. The assessment components, weightings and task requirements to be applied to internal assessment are identified on page 46. They ensure a common focus across schools for internal assessment in the course, while allowing for flexibility in the design of tasks. A variety of tasks should be used to give students the opportunity to demonstrate outcomes in different ways and to improve the validity and reliability of the assessment.

Schools should develop an assessment program that:

- specifies the various assessment tasks and the weightings allocated to each task
- provides a schedule of the tasks designed for the whole course.

The school should also develop and implement procedures to:

- inform students in writing of the assessment requirements for the course before the commencement of the course
- ensure that students are given adequate written notice of the nature and timing of assessment tasks
- provide meaningful feedback on each student's performance in all assessment tasks
- maintain records of marks awarded to each student for all assessment tasks
- address issues relating to illness, misadventure and malpractice in assessment tasks
- address issues relating to late submission and non-completion of assessment tasks

- advise students in writing if they are not meeting the assessment requirements in a course and indicate what is necessary to enable the students to satisfy the requirements
- inform students about their entitlements to school reviews and appeals to the Board
- conduct school reviews of assessments when requested by students.

Assessment Components, Weightings and Tasks

There should be a balance between the assessment of:

- knowledge and understanding outcomes and course content; and
- skills outcomes and content.

One task may be used to assess several components. It is suggested that two to three tasks are sufficient to assess the HSC course outcomes for a one-unit course and three to five tasks are sufficient to assess the HSC course outcomes for a two-unit course.

Component	Weighting
<ul style="list-style-type: none"> • knowledge and understanding outcomes and course content • skills outcomes and course content 	100%
Marks	100

Assessment tasks may include the following:

- short-answer tests
- oral reports
- critical reviews
- debates
- essays
- multiple choice tests
- internet-based research assignments
- small business projects
- website development
- critical reviews
- problem-solving assignments/tests
- individual and group project work
- diary/learning log
- written reports on case studies, excursions, field trips, surveys
- individual/group reports
- products
- demonstrations
- interviews

At least one task must be project-based.

- 60 hour course — minimum 20% weighting for Project Work in the HSC course
- 120 hour course — minimum 30% weighting for Project Work in the HSC course

The assessment tasks given to students must:

- be consistent with the objectives and outcomes being assessed
- provide for a range of performances and achievements within the group
- be consistent in number with comparable 1 or 2 unit Board-developed courses
- use a range of assessment instruments. Each instrument must be appropriate to the outcomes it is designed to measure.

At least one assessment task must derive from formal examinations. Formal examinations are defined as any form of examination as used in the Higher School Certificate under conditions similar to those in the HSC for comparable tasks and which apply equally to all students at the school.