Stage 5 Information and Software Technology

Course plan

On-campus

Aim: The aim of the Information and Software Technology Years 7–10 syllabus is to develop student's knowledge and understanding, confidence and creativity in analysing, designing, developing and evaluating information and software technology solutions.

Rationale: The overall rationale for this course is outlined in detail in the Information and Software Technology Elective Course Years 7–10 Syllabus dated June 2003.

The course plan for this school is designed to:

- ensure that all aspects of the syllabus are covered
- build on prior knowledge gained through involvement in Stages 1, 2, 3 and 4 computer-based courses and experiences
- further assist students to develop the knowledge, understanding and skills to solve problems in real life situations within a computing context
- develop skills in problem solving through the delivery of course content by applying a project based approach
- identify task aims and objectives and evaluate the output with reference back to the original task aim and objectives
- integrate the concepts of prototyping and modeling as an essential part of project work.

Core content

Core content has been integrated in each of the eight option topics.
The core content elements are:

- Design, produce and evaluate
- Data handling
- Hardware
- Issues
- Past, current and emerging technologies
- People
- Software

Option topic selection

It is recommended that for the:

- 100-hour course topics are selected from Band A.
- 200-hour course topics are selected from Band B.

In selecting option topics teachers should ensure that all core content is covered over the time period. Not all elements of the core content are included in each of the option topics. See table below.

Parameters for selecting option topics

- Select topics with reference to student's prior learning in Years 7 and 8 Technology courses.
- Availability of resources.

- Select a minimum of two topics and a maximum of four topics for 100-hour course.
- Select a minimum of four and a maximum of eight option topics for 200-hour course.
- **Band B** topics:
  i. incorporate higher order thinking skills
  ii. require students to work more independently
  iii. require students to plan and evaluate project work based upon stated aims and objectives
  iv. feature projects that are more opened ended.

It is recommended that topics are segmented into sub-projects given the length of time that could be allocated to a topic if a minimum of four topics is selected as the schedule for delivery.

Course delivery

In developing the option topics, core content has been incorporated into all units but in varying degree. It is recommended that teachers selecting option topics for 100-hour course select topics from **Band A.** The topics are not sequential, however topics in **Band B** have been designed with the aim of further developing student learning based upon prior learning strategies gained from the **Band A** topics. For example, it is recommended that Software Development and Programming is delivered before the Robotics and Automated Systems.

Key competencies

The following competencies and processes should be integrated into projects and tasks. **Students learn to:**

- **collect, analyse** and **organise** data and information
- **communicate ideas** and **information** in hard copy and electronic means to a target audience
- **plan, prepare** and **present** individual and team project work
- **work cooperatively** with or within teams to achieve a set goal
- apply information based technologies to the **problem solving** process
- apply **mathematical ideas** and **techniques** when applying software to specific tasks
- apply a variety and range of **hardware** and **software** technologies to demonstrate competencies.

In preparation for the Year 10 Mandatory Computing **Competencies** State based test computing teachers should be aware that while school policy is that individual KLAs will be responsible for ensuring student knowledge, understanding and skills are developed as required it is recommended that:

- projects and tasks within topics wherever possible are linked to key competencies
- short, stand alone software application tasks are delivered as a review and revise process
- computer technology based terminology and vocabulary is revised on a regular basis.

Life skills

Teachers assigned to the School's Life Skills classes should select topics with reference to:

- the student's individual skill levels
- programs currently being delivered within Life Skill classes
- a greater focus on software use and application.

It is recommended that projects be of a **shorter duration** and include segments from all eight option topics.

Option topic planner

Band	Key competencies	Option topics			
A	Integrated into topics or delivered as stand alone tasks.	Database Design	Networking Systems	Authoring and Multimedia	Internet and Web site Development
B		Digital Media	Software Development and Programming	Robotics and Automated Systems	Artificial Intelligence, Simulation and Modeling

Distance Education

The present Stage 5 course delivered through our Distance Education Centre is to be evaluated in terms of the aims, objectives and outcomes of the new Information and Software Technology Syllabus released June, 2003.

Assessment

In planning course delivery teachers should include strategies to assess student progress within the following framework:

- school assessment, recording and reporting processes and policies
- topic aims and objectives
- individual student knowledge, understanding and competencies
- contribution to team tasks and projects.

Course mapping tables

Band	Option topic			
A	**Database Design** Prototype a database solution for a given scenario. Enter and manipulate data through searches and sorts. Generate reports. Students to create own scenario and solution. Evaluate by checking stated aims and objectives are achieved.			
	Objective	**Stage**	**Outcome**	**Students learn about**
	Develop knowledge and understanding of a range of computer software and hardware.	**5**	**A student:** **5.1.1** selects and justifies the application of appropriate software programs to a range of tasks **5.1.2** selects, maintains and appropriately uses hardware for a range of tasks	C7 Types and examples C4 Hardware functions C4 Hardware components
	Apply problem solving and critical thinking in order to design and develop creative information and software technology solutions for a variety of real world problems.		**5.2.1** describes and applies problem solving processes when creating solutions **5.2.2** designs, produces and evaluates appropriate solutions to a range of challenging problems	C1 Defining and analyzing the problem C1 Designing possible solutions C1 Producing solutions C1 Evaluating solutions
	Develops a responsible and ethical attitude to the use of information software and software technology.		**5.3.1** justifies responsible practices and ethical use of information and software technology **5.3.2** acquires and manipulates data and information in an ethical manner	C3 Data and information C3 Data forms C3 Data sources C3 Data types C3 Data security

Band	Option topic			
A	**Internet and Web Site Development** Study development of the Internet. Apply internet tools for research purposes. Identify features of web page design. Create a web page using design principles. Students to use design process to design, produce and evaluate a web page for a specific purpose. Evaluate in terms of stated aim and objectives.			
	Objective	**Stage**	**Outcome**	**Students learn about**
	Develop knowledge and understanding of a range of computer software and hardware	**5**	**A student:** **5.1.1** selects and justifies the application of appropriate software programs to a range of tasks **5.1.2** selects, maintains and appropriately uses hardware for a range of tasks	C7 Software systems C7 Types & examples of software C7 Factors affecting hardware C7 Interface design C7 Features & elements of GUI C4 Hardware functions C4 Hardware components
	Apply problem solving and critical thinking in order to design and develop creative information and software technology solutions for a variety of real world problems.		**5.2.1** describes and applies problem solving processes when creating solutions **5.2.2** designs, produces and evaluates appropriate solutions to a range of challenging problems	C1 Management C1 Defining and analyzing the problem C1 Designing possible solutions C1 Producing solutions C1 Methods of evaluation C1 Evaluating solutions
	Develops a responsible and ethical attitude to the use of information software and software technology		**5.3.1** justifies responsible practices and ethical use of information and software technology **5.3.2** acquires and manipulates data and information in an ethical manner	C5 Legal issues C5 Ethical issues
	Effective communication skills and collaborative work practices leading to information and software technology solutions for specific problems.		**5.5.2** communicates ideas, processes and solutions to a target audience	C1 Communication techniques

Band	Option topic			
A	**Authoring and Multimedia** Develop understanding of effective communication for a specific purpose to a target audience. Develop skills in the use of authoring software to develop a multimedia product. Create a multimedia product. Evaluation of product by target audience.			
	Objective	**Stage**	**Outcome**	**Students learn about**
	Develop knowledge and understanding of a range of computer software and hardware	**5**	**A student:** **5.1.1** selects and justifies the application of appropriate software programs to a range of tasks **5.1.2** selects, maintains and appropriately uses hardware for a range of tasks	C7 Software systems C7 Types & examples of software C7 features and elements of GUI C4 Microprocessors C4 Hardware functions
	Apply problem solving and critical thinking in order to design and develop creative information and software technology solutions for a variety of real world problems.		**5.2.1** describes and applies problem solving processes when creating solutions **5.2.2** designs, produces and evaluates appropriate solutions to a range of challenging problems	C1 Management C1 Defining and analyzing the problem C1 Designing possible solutions C1 Producing solutions C1 Methods of evaluation C1 Evaluating solutions
	Develops a responsible and ethical attitude to the use of information software and software technology		**5.3.2** acquires and manipulates data and information in an ethical manner	C3 data and information C3 data forms C3 Data sources C3 data types C3 data compression techniques
	Develops knowledge and understanding of the effects of past, current and emerging information and software technologies on the individual and society.		**5.4.1** analyses the effects of past, current and emerging information and software technologies on the individual and society	C2 The impact of past, current and emerging technologies
	Effective communication skills and collaborative work practices leading to information and software technology solutions for specific problems.		**5.5.2** communicates ideas, processes and solutions to a target audience **5.5.3** describes and compares key roles and responsibilities of people in the field of information and software technology	C1 Communication techniques C6 roles and responsibilities of people

Band	Option topic			
A	**Networking Systems** Develop understanding and knowledge of networking systems and their application**.** Study school networking system. Understand file management and use of protocols. Reinforce ethical and social issues relating to data security and passwords. Design a system for a specific purpose identifying users and groups for the purposed system.			
	Objectives	**Stage**	**Outcomes**	**Students learn about**
	Develop knowledge and understanding of a range of computer software and hardware	**5**	**A student:** **5.1.1** selects and justifies the application of appropriate software programs to a range of tasks **5.1.2** selects, maintains and appropriately uses hardware for a range of tasks	C7 Factors affecting hardware C4 Hardware functions C4 Hardware components
	Apply problem solving and critical thinking in order to design and develop creative information and software technology solutions for a variety of real world problems.		**5.2.1** describes and applies problem solving processes when creating solutions **5.2.2** designs, produces and evaluates appropriate solutions to a range of challenging problems **5.2.3** critically analyses decision making processes in a range of information and software solutions	C1 Defining and analyzing the problem C1 Designing possible solutions C1 Producing solutions C1 Methods of evaluation C1 Evaluating solutions
	Develops a responsible and ethical attitude to the use of information software and software technology		**5.3.1** justifies responsible practices and ethical use of information and software technology **5.3.2** acquires and manipulates data and information in an ethical manner	C3 data and information C3 data types C3 data security C3 transmission types C3 data storage and functions C5 social issues C5 industrial issues
	Develops knowledge and understanding of the effects of past, current and emerging information and software technologies on the individual and society.		**5.4.1** analyses the effects of past, current and emerging information and software technologies on the individual and society	C2 impact of past, current and emerging information and software technologies
	Effective communication skills and collaborative work practices leading to information and software technology solutions for specific problems		**5.5.2** communicates ideas, processes and solutions to a target audience **5.5.3** describes and compares key roles and responsibilities of people in the field of information and software technology	C1 Communication techniques C6 roles and responsibilities of people