Year 9 Digital Technologies: Introduction to General Purpose Programming (Visual BASIC)

Achievement Standard: By the end of Year 10, students explain the control and management of networked digital systems and the security implications of the interaction between hardware, software and users. They explain simple data compression, and why content data are separated from presentation.

Students plan and manage digital projects using an iterative approach. **They define and decompose complex problems in terms of functional and non-functional requirements**. **Students design and evaluate user experiences and algorithms. They design and implement modular programs,** including an object-oriented program, **using algorithms and data structures involving modular functions** that reflect the relationships of real-world data and data entities. They take account of privacy and security requirements when selecting and validating data. **Students test and predict results and implement digital solutions.** They evaluate information systems and their solutions in terms of risk, sustainability and potential for innovation and enterprise. They share and collaborate online, establishing protocols for the use, transmission and maintenance of data and projects.

Unit Specific Information: *[various forms e.g. assessment focus, context, etc]*

Students will learn the concepts of algorithms and programming in a general programing language and builds on the general programming language concepts. Students will then use this knowledge to complete an exam covering these concepts.

In this unit, students will study to the basic constructs of programming (algorithm, sequence, selection, iteration and function). Using the Visual BASIC program, they will use tutorials to learn, understand and consolidate knowledge and skills inside this program.

Guiding Questions:

Why is programming important in Digital Technology?
What is an iterative approach to project management?

- What is a modular program?
- What evidence do you need to show you have planned and tested a digital project?
- How can you show your thinking when evaluating a project against criteria?

Assessment Details:

Summative Task:
Students will complete an exam using MS Visual BASIC skills especially the coding, analysis of the given requirements, designing, implementing (including testing) of the solution.
Conditions:
In class
Supervised
2 Lessons
On Computers

READING / VIEWING/ LISTENING:
Core Text 1: OneNote tutorials

COMPREHENSION SKILL FOCUS:
Determining Importance

THINKING:
Decompose
Design
Implement
Evaluate

EXAM
In Class Exam featuring VB programming code

HIGHLY VALUED LANGAUGE FEATURE FOCUS:
Elaborating clauses

Priority Standards (Proficiency Scale – level 2/3)

	Knowledge & Understanding	Processes & Production Skills
3	I can understand and implement basic programming constructs.	I can plan and manage digital projects. I can design and implement modular programs using algorithms.
2	Recognise or describe key vocabulary and concepts: • Algorithm • Sequence • Selection • Iteration • Function	Recognise and apply key vocabulary and concepts: • Functional requirements • Non-functional requirements • Iterative approach • Modular programs Perform basic processes such as: - Define and decompose complex problems (using functional/non-functional requirements) - Design and implement modular programs - Create algorithms to solve problems - Test and predict results - Implement digital solutions

Learning Goals:

Strands and Sub-Strands	Australian Curriculum Content Descriptors	Kirwan High Learning Goals
Processes & Production Skills	• Define and decompose real-world problems precisely, taking into account functional and non-functional requirements and including interviewing stakeholders to identify needs	• Students will be able to create an analysis document • Students will be able to create a solution specification document
	• Design the user experience of a digital system by evaluating alternative designs against criteria including functionality, accessibility, usability, and aesthetics	• Students will be able to design the user interfaces for their project • Students will be able to consider alternative designs • Students will be able to evaluate designs against the criteria of functionality, accessibility, usability, and aesthetics • Students will be able to develop a algorithms
	• Design algorithms represented diagrammatically and in structured English and validate algorithms and programs through tracing and test cases	• Students will be able to use variables and arrays • Students will be able to use sequence, selection, iteration and functions • Students will be able to create a test plan to counter any risks of bugs and hacking
	• Implement modular programs, applying selected algorithms and data structures including using an object-oriented programming language	• Students will be able to carry out and document their test plan • Students will be able to evaluate their product and the process and make future recommendations

Possible Habit of Mind:				
Exploring Meaning of the HOM By the end of this unit students will be able to:	**Expanding Capacity for using the HOM** By the end of this unit students will be able to:	**Increasing Alertness for the HOM** By the end of this unit students will be able to:	**Extending Values of the HOM** By the end of this unit students will be able to:	**Building Commitment towards the HOM** By the end of this unit students will be able to:

General Capabilities: This unit provides opportunities for students to engage in following capabilities:

Literacy
- ☐ Comprehending texts through listening, reading and viewing
- ☐ Composing texts through speaking, writing and creating
- ☐ Text knowledge
- ☐ Grammar knowledge
- ☐ Word knowledge
- ☐ Visual knowledge

Numeracy
- ☐ Estimating and calculating with whole numbers
- ☐ Recognising and using patterns and relationships
- ☐ Using fractions, decimals, percentages, ratios and rates
- ☐ Using spatial reasoning
- ☐ Interpreting statistical information
- ☐ Using measurement

ICT
- ☐ Applying social and ethical protocols and practices when using ICT
- ☐ Investigating with ICT
- ☐ Creating with ICT
- ☐ Communicating with ICT
- ☐ Managing and operating ICT

Critical and creative thinking
- ☐ Inquiring - identifying, exploring and organising information and ideas
- ☐ Generating ideas, possibilities and actions
- ☐ Reflecting on thinking and processes
- ☐ Analysing, synthesising and evaluating reasoning and procedures

Personal and social capability
- ☐ Self-awareness
- ☐ Self-management
- ☐ Social awareness
- ☐ Social management

Ethical understanding
- ☐ Understanding ethical concepts and issues
- ☐ Reasoning in decision making and actions
- ☐ Exploring values, rights and responsibilities

Intercultural understanding
- ☐ Recognising culture and developing respect
- ☐ Interacting and empathising with others
- ☐ Reflecting on intercultural experiences and taking responsibility

Cross Curriculum Priorities:

- ☐ Aboriginal and Torres Strait Islander histories and cultures
- ☐ Asia and Australia's engagement with Asia
- ☐ Sustainability

Differentiation [for small groups or individuals]: