

VCE Applied Computing Study Design 2025–2028

Introducing the new study design

Phil Feain

Curriculum Manager, Digital Technologies

VCAA



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Acknowledgement of Country

The VCAA respectfully acknowledges the Traditional Owners of Country throughout Victoria and pays respect to the ongoing living cultures of First Peoples.



Purpose of this session

- Update of Digital Technologies in Victoria in 2024–2025
- Discuss the development of the new study design
- Look at the VCE Applied Computing Study Design (2025–2028)
- Questions

Digital Technologies

2024–2025 Update



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1. VCE Applied Computing

- Reviewed in 2023.
- Published in early March 2024.
- Developed alongside:
 - Victorian Curriculum F–10 Digital Technologies curriculum Version 2.0
 - Victorian Curriculum F–10 Digital Literacy Foundational skill.
- Development of resources has commenced.



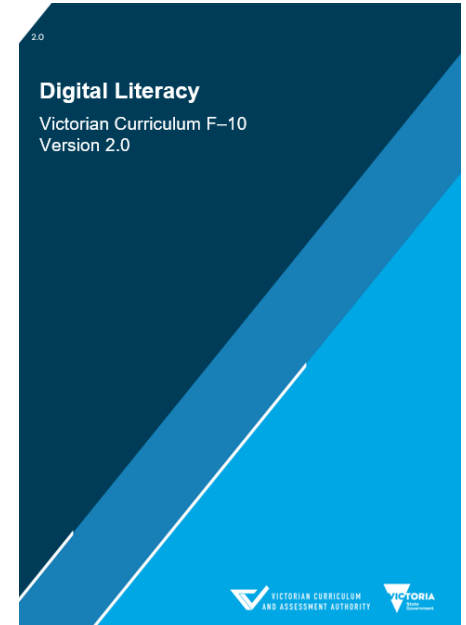
2. F–10 – Digital Technologies

- Revised in 2023.
- To be published in mid-2024.
- ACARA’s Version 9.0 was adopted and adapted.
- Leads into VCE Applied Computing.
- Progression from F–10 to 11–12.
- Development of resources has commenced.



3. F–10 – Digital Literacy

- Revised in 2023.
- To be published in 2024.
- ACARA’s Version 9.0 of the Digital Literacy capability was adopted and adapted.
- This will be known as a Foundational skill along with Literacy and Numeracy.
- Minor adaption to meet the needs of Victoria.

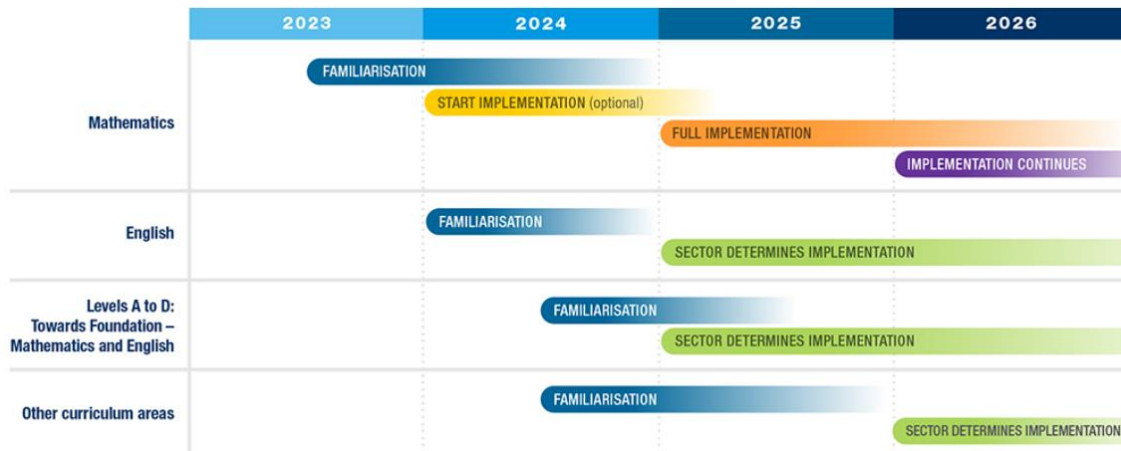


4. F-10 – Timelines for implementation

Timeline (as of Term 4 2023)

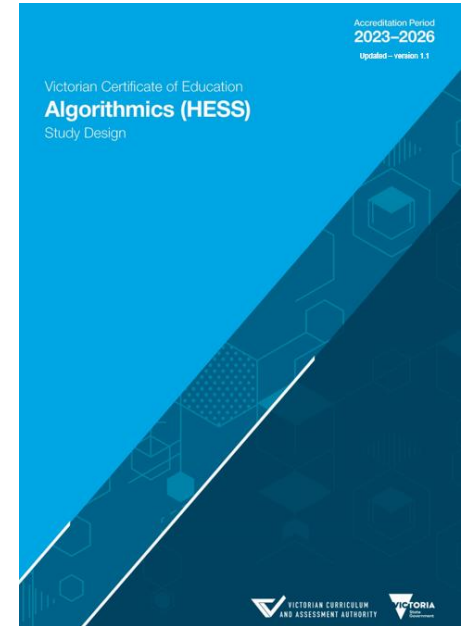
The original timeline published in Term 2 2023 has been updated.

The updated timeline prioritises Mathematics and English so that schools and teachers can focus on the knowledge and skills that underpin numeracy and literacy. It also gives school leaders and teachers more time to become familiar with the other curriculum areas in 2024 and 2025.



5. Algorithmics (HESS)

- To be reviewed in 2025.
- The current study design commenced in schools in 2023.
- Monitoring has commenced and is currently taking place across this year.



VCE Applied Computing

Developing the study design



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Development timeline

2019

- Draft VCE Applied Computing Study Design (2020–2023) is published – Implementation
- Monitoring for next study design commences

2020

- First year in schools for VCE Applied Computing Study Design (2020–2023)
- COVID-19 – Accreditation extended (2020–2024) – Monitoring for next study design

2021

- Second year in schools for VCE Applied Computing Study Design (2020–2024)
- COVID-19 – Monitoring for next study design

2022

- Third year in schools for VCE Applied Computing Study Design (2020–2024)
- Monitoring for next study design and planning for review in 2023

2023

- Fourth year in schools for VCE Applied Computing Study Design (2020–2024)
- Review of next VCE Applied Computing Study Design

Monitoring leading to Review

- Feedback from teachers over the years
- School-based Assessment Audit data
- Enrolment data and trends
- Interviews with key stakeholders involved in writing examinations, assessing examinations, state reviewers and teachers
- Monitoring questionnaire to teachers in 2022
- Benchmarking and research

Review

Monitoring indicated the following directions to be considered:

- improve the clarity of the key knowledge – ‘such as’ and ‘including’
- improve the clarity of assessment tasks – Units 1&2 and Units 3&4 SACs
- update and refresh the content of the study design
- future proof the study design for emerging technologies/AI, etc
- investigate workload issues in Units 1–4.

F–10 Digital Technologies was revised at the same time in parallel with VCE

- F–10 – Developed as a progression towards VCE Applied Computing.

Changes made to the study design

- Layout:
 - Terms used
 - PSM Specs
 - key knowledge
 - assessment tasks
- Key knowledge:
 - more use of ‘such as’ and ‘including’
- Improved clarity of assessment tasks:
 - Units 1 and 2
 - Units 3 and 4 SACs
- Refreshing of content across all outcomes and units
- Introduced new frameworks and specified sections of key legislation

Working towards the final draft



VCE Applied Computing

A look at the study design



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Terms used in this study

Terms used in this study

For the purposes of this study design and associated assessment, the following definitions will apply.

Term	Definition
Alpha testing	A testing phase that checks whether modules or solutions meet all requirements and function as expected. Alpha testing is carried out by developers, independent testers or high-level users in a development or testing environment throughout the development phase.
Archiving	The process of moving data from a system that no longer needs to be accessed regularly to a less frequently accessed storage area for future use or to meet compliance requirements. This ensures that data can be stored separately to systems for long periods of time without impacting on current performance or storage requirements.
Backup	The process of making a copy of data and storing the copy separately to the original data in case it is needed due to data loss. Backed up data can be full (entire copy of data), differential (changes since last full backup), incremental (changes since last backup) or a combination of these. Backups can either run manually or be scheduled to run automatically, and can be stored on a local hard drive (distinct from the original source), on external storage devices or by using cloud computing. Backups are restored when data loss occurs.

Problem-solving methodology

Units 1 to 4: Problem-solving methodology specifications

Stage and activities	Description	Unit application					
		AC		DA		SD	
		1	2	3	4	3	4
Analysis: involves determining what is required to solve a problem. This involves acquiring and analysing data, and then identifying the solution requirements, constraints and scope.							
Solution requirements	Solution requirements can be described as functional and non-functional.						
	Determine the functional requirements of the solution. These describe what the software solution should do. This involves specific details such as input required, output developed and functions of the solution, including data manipulation and validation.	•	•	•			•
	Determine the non-functional requirements. These describe the quality attributes of the solution, including usability, reliability, portability, robustness and maintainability.	•	•	•			•
	Use tools to assist in determining solution requirements, including context diagrams, data flow diagrams and use case diagrams.						•
Solution constraints	Solution constraints can be described as the conditions or limitations that must be considered when designing a solution.						
	Determine the constraints of the solution. These include economic (cost and time), technical (speed of processing, capacity, availability of equipment, compatibility, security), social (level of expertise of users), legal (intellectual property, ownership of data, privacy of data), and usability (accessibility, usefulness, ease of use).	•	•	•			•



Key knowledge – Unit 1

Key knowledge

- types and purposes of qualitative and quantitative data, such as:
 - interviews and surveys to gather insights/perspectives on a topical issue
 - sensor data to monitor a person's health
 - census and demographic data for statistical analysis
 - data collected over a period of time
 - data generated by artificial intelligence
- characteristics of data types relevant to the selected software tools, such as:
 - text (character, string)
 - numeric (integer, floating point, date/time)
 - Boolean
- factors affecting the quality of data and information, such as:
 - accuracy
 - bias
 - integrity
 - relevance
 - reliability
- how emerging technologies are affected by key legislation and frameworks, such as:
 - Australia's Artificial Intelligence (AI) Ethics Principles
 - *Copyright Act 1968* (Cwlth)
 - *Health Records Act 2001* (HPP 1, 2, 5)
 - *Privacy Act 1988* (Cwlth) (APP 1, 2, 6)
 - *Privacy and Data Protection Act 2014* (IPP 1, 2, 5, 8)
- ethical issues arising from the development of emerging technologies, such as:
 - cyber security threats
 - biometric systems collecting and storing data
 - job displacement
- ethical issues arising from the use of artificial intelligence, such as:
 - creating content that is biased, discriminatory or otherwise harmful
 - creating content that could be used for cyber attacks
 - generating content from existing copyright materials

Key knowledge – Units 3 and 4

Key knowledge

- effective and efficient methods to manipulate data using software tools, including:
 - use of templates
 - software functions
 - use of artificial intelligence tools to represent data and information
- techniques for analysing data to refine findings for data visualisations, including:
 - descriptive statistics (average, median, minimum, maximum, range, standard deviation, count/frequency, sum)
 - Pearson's correlation co-efficient (r)
 - the shape and skew of data
- techniques for implementing data security, including:
 - using security controls
 - developing an implementation plan
 - using a checklist to ensure controls are successfully implemented
- characteristics of information for target audiences, including:
 - age appropriateness
 - commonality of language
 - culture and gender inclusiveness
- techniques for developing infographics and dynamic data visualisations, including:
 - organising the hierarchy of information
 - pagination
 - clarifying data refresh requirements
- formats and conventions applied to infographics and dynamic data visualisations to improve their effectiveness for intended users, including:
 - use of colours, fonts, images and icons
 - visual hierarchy and clarity of message
- techniques for improving data quality by validating and verifying data, including:
 - existence checking
 - type checking
 - range checking
 - checking end-to-end data integrity from collection to visualisation

Assessment tasks – Unit 1

Outcome 1

- A folio of exercises to demonstrate the learning of database, spreadsheet and data visualisation software tools.
- A solution including the use of database, spreadsheet and/or data visualisation software tools in response to teacher-provided solution requirements and designs.
- A personal portfolio to showcase the development of databases, spreadsheets and data visualisations.

Outcome 2

- A folio of exercises to demonstrate the learning of an object-oriented programming language.
- A software solution that includes the designs, solution and a testing table in response to teacher-provided solution requirements.
- The creation and maintenance of code repositories to track the progression of students' learning, using platforms such as GitHub.
- A software solution developed in response to a teacher-provided problem-solving challenge, presented as a hackathon.

Assessment tasks – Unit 2

Outcome 1

- An innovative solution that includes an analysis, designs, the development of a proof of concept/prototype/product and an evaluation.
- A presentation (oral, multimedia, visual) of an innovative solution.
- A written report that documents the development of an innovative solution.
- An annotated visual report that documents the development of an innovative solution.

Outcome 2

- A teacher-provided case study with structured questions that investigates a cyber security incident and how it could be prevented in the future.
- A teacher-provided case study with structured questions that investigates a network, its vulnerabilities and how these could be mitigated.

Assessment tasks – DA U3 O1 SAC

Outcomes	Marks allocated	Assessment tasks
Unit 3 Outcome 1 Interpret teacher-provided solution requirements and designs, extract data from large repositories, manipulate and cleanse data, conduct statistical analysis and develop data visualisations to display findings.	100	<p>In response to teacher-provided solution requirements and designs:</p> <ul style="list-style-type: none">extract and reference data from large repositories into a databasequery data using databases and SQLuse spreadsheet functions to manipulate datastatistically analyse data in spreadsheetsdevelop data visualisations. <p>Task time allocated should be at least 6–10 lessons.</p>
Total marks	100	

Assessment tasks – DA U4 O2 SAC

Outcomes	Marks allocated	Assessment tasks
<p>Unit 4</p> <p>Outcome 2</p> <p>Respond to a teacher-provided case study to analyse the impact of a data breach on an organisation, identify and evaluate threats, evaluate current security strategies and make recommendations to improve security strategies.</p>	<p>100</p>	<p>The student's performance will be assessed using one of the following:</p> <ul style="list-style-type: none">• structured questions• a report in written format• a report in multimedia format. <p>The case study scenario needs to enable:</p> <ul style="list-style-type: none">• an analysis of the breach• an evaluation of the threats• recommendations to improve security strategies. <p>Task time allocated should be 100–120 minutes.</p>
Total marks	100	

Assessment tasks – DA SAT

Outcomes	Assessment tasks
Unit 3 Outcome 2 Propose a research question, formulate a project plan, collect and prepare data, and generate design ideas and a preferred design for creating infographics and/or dynamic data visualisations.	A documented research question and a project plan (Gantt chart) indicating tasks, times, milestones, dependencies and the critical path AND An analysis that defines the requirements, constraints and scope of infographics and/or dynamic data visualisations AND A collection of complex data sets that has been referenced AND A folio of design ideas and evaluation criteria AND Detailed design specifications of the preferred design. Time allocated should be at least 8–10 weeks of class time.
	Unit 4 Outcome 1 Develop and evaluate infographics and/or dynamic data visualisations that meet requirements and assess the effectiveness of the project plan.
	Infographics and/or dynamic data visualisations that present findings in response to a research question AND <ul style="list-style-type: none">an evaluation of the efficiency and effectiveness of infographics and/or dynamic data visualisationsan assessment of the effectiveness of the project plan (Gantt chart) in monitoring project progress in one of the following: <ul style="list-style-type: none">a written reportan annotated visual plan. Time allocated should be at least 8 weeks of class time.

Assessment tasks – SD U3 O1 SAC

Outcomes	Marks allocated	Assessment tasks
Unit 3 Outcome 1 Interpret teacher-provided solution requirements and designs and use appropriate features of an object-oriented programming language to develop working software modules.	100	<p>In response to teacher-provided solution requirements and designs, develop four working modules with increasing complexity of programming skills.</p> <ul style="list-style-type: none">Module 1: Simple calculations using arithmetic, logical and conditional operatorsModule 2: Reading and writing filesModule 3: Sorting and searching with functions or methodsModule 4: Classes and objects <p>At least two modules must include a GUI.</p> <p>All modules must include testing.</p> <p>Task time allocated should be at least 8–14 lessons.</p>
Total marks	100	

Assessment tasks – SD U4 O2 SAC

Outcomes	Marks allocated	Assessment tasks
Unit 4 Outcome 2 Respond to a teacher-provided case study to analyse an organisation's software development practices, identify and evaluate current security controls and threats to software development practices, and make recommendations to improve practices.	100	<p>The student's performance will be assessed using one of the following:</p> <ul style="list-style-type: none">• structured questions• a report in written format• a report in multimedia format. <p>The case study scenario needs to enable:</p> <ul style="list-style-type: none">• an analysis of the organisation's software development practices• an evaluation of the current security controls and threats• recommendations to improve practices. <p>Task time allocated should be 100–120 minutes.</p>
Total marks	100	

Assessment tasks – SD SAT

Outcomes	Assessment tasks
Unit 3 Outcome 2 Document a problem, need or opportunity, formulate a project plan, document an analysis, and generate design ideas and a preferred design for creating a software solution.	<p>A brief outlining the proposed solution and a project plan (Gantt chart) indicating tasks, times, milestones, dependencies and the critical path</p> <p>AND</p> <p>Analytical tools that depict the interactions between systems, users, data and networks</p> <p>AND</p> <p>An analysis that defines the requirements, constraints and scope of a solution in the form of a software requirements specification</p> <p>AND</p> <p>A folio of design ideas and evaluation criteria</p> <p>AND</p> <p>Detailed design specifications of the preferred design.</p> <p>Time allocated should be at least 8–10 weeks of class time.</p>
	Unit 4 Outcome 1 Develop and evaluate a software solution that meets requirements and assess the effectiveness of the project plan.
	<p>A software solution that meets the software requirements specification</p> <p>AND</p> <p>Preparation and conduction of beta testing</p> <p>AND</p> <ul style="list-style-type: none">• an evaluation of the efficiency and effectiveness of the software solution• an assessment of the effectiveness of the project plan (Gantt chart) in monitoring project progress <p>in one of the following:</p> <ul style="list-style-type: none">• a written report• an annotated visual plan. <p>Time allocated should be at least 8 weeks of class time.</p>

Major changes to U1&2 AC

Unit 1

- Outcome 1:
 - SQL
 - Updated assessment tasks
- Outcome 2:
 - Emerging trends
 - OOP
 - Removal of project management
 - Updated assessment tasks

Unit 2

- Outcome 1:
 - UN Sustainable Development Goals
 - AI
 - Frameworks
 - Updated assessment tasks
- Outcome 2:
 - Cyber security incident
 - Emerging trends/AI
 - Cryptography
 - Frameworks
 - Updated assessment tasks

Major changes to U3&4 DA

Unit 3

- Outcome 1:
 - Emerging trends
 - SQL
 - Statistical analysis
 - Updated assessment task (SAC)
- Outcome 2:
 - Ideation techniques
 - Updated assessment task (SAT)

Unit 4

- Outcome 1:
 - Statistical analysis
 - Updated assessment task (SAT)
- Outcome 2:
 - Emerging trends
 - Cryptography
 - Updated assessment task (SAC)

Major changes to U3&4 SD

Unit 3

- Outcome 1:
 - Emerging trends
 - OOP
 - Errors
 - Updated assessment task (SAC)
- Outcome 2:
 - Brief
 - OOP
 - File management
 - Ideation techniques
 - Updated assessment task (SAT)

Unit 4

- Outcome 1:
 - Innovative approaches to software development
 - Alpha and beta testing
 - Updated assessment task (SAT)
- Outcome 2:
 - Threat modelling principles
 - Frameworks
 - Updated assessment task (SAC)

Next steps – Towards 2025

Things we are developing to support VCE Applied Computing in 2025:

- Support material (formally Advice for teachers)
- Performance descriptors
- Administrative information for School-based Assessment (SAT Criteria)
- Support documentation for each unit
- Implementation webinars and on-demand videos
- Resources for SACs and SATs ready for 2025

Contact

Phil Feain

- Digital Technologies Curriculum Manager – VCAA
- Ph: (03) 9059 5146
- Philip.Feain@education.vic.gov.au

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Questions