VCE Applied Computing 2025–2028

Video 1

Background to the study design

VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

VICTORIA State Government

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.

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Background to the study design

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Purpose of this presentation

- Provide an overview of the VCE Applied Computing Study Design
- Discuss the major changes to each unit
- Look at the outcome statements
- Look at the assessment tasks

Overview

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
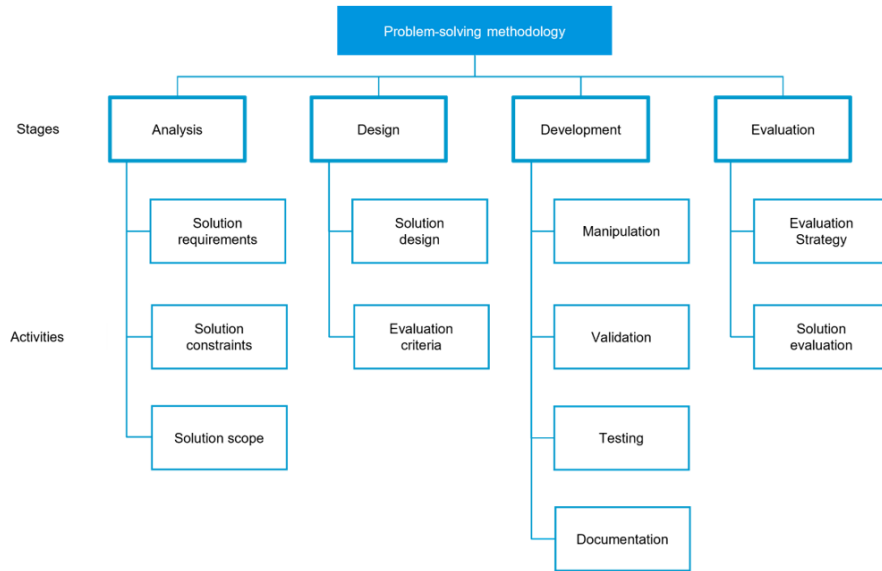
Units 1 to 4: Problem-solving methodology specifications

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).	•	•	•		•	
Solution scope	Solution scope describes the boundaries or parameters of the solution.						
	Identify what will be and/or what will not be addressed by the solution.	•	•	•		•	

Unit 1 Applied computing

Major changes to Unit 1 AC

- **Outcome 1:**
  - SQL
  - Updated assessment tasks

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

Unit 1 Outcome 1: Data analysis

Outcome 1

- Interpret teacher-provided solution requirements and designs, analyse data and develop data visualisations to present findings.

Unit 1 Outcome 1 Assessment

Outcome 1

Suitable tasks for assessment in this unit may be selected from the following:

- 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.

Unit 1 Outcome 2: Programming

Outcome 2

- Interpret teacher-provided solution requirements to design and develop a software solution using an object-oriented programming language.

Unit 1 Outcome 2 Assessment

Outcome 2

Suitable tasks for assessment in this unit may be selected from the following:

- 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.

Unit 2 Applied computing

Major changes to Unit 2 AC

- **Outcome 1:**
  - UN Sustainable Development Goals
  - AI
  - Frameworks
  - Updated assessment tasks

- **Outcome 2:**
  - Cyber security incident
  - Emerging trends/AI
  - Cryptography
  - Frameworks
  - Updated assessment tasks

Unit 2 Outcome 1: Innovative solutions

Outcome 1

- In collaboration with other students, identify a problem, need or opportunity to analyse, design, develop and evaluate an innovative solution.

Unit 2 Outcome 1 Assessment

Outcome 1

Suitable tasks for assessment in this unit may be selected from the following:

- 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.

Unit 2 Outcome 2: Cyber security

Outcome 2

- Respond to a teacher-provided case study to examine a cyber security incident or a network vulnerability, evaluate the threats to a network, and propose strategies to protect the security of data and information on the network.

Unit 2 Outcome 1 Assessment

Outcome 2

Suitable tasks for assessment in this unit may be selected from the following:

- 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.

Unit 3 Data Analytics

Major changes to Unit 3 DA

- **Outcome 1:**
  - Emerging trends
  - SQL
  - Statistical analysis
  - Updated assessment task (SAC)

- **Outcome 2:**
  - Ideation techniques
  - Updated assessment task (SAT)

Unit 3 Outcome 1: Data analytics

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.

Unit 3 Outcome 1: Data analytics

Contribution to final assessment

- School-assessed Coursework for Unit 3 will contribute 10 per cent to the study score.

- Total marks – 100

Assessment task

In response to teacher-provided solution requirements and designs:

- extract and reference data from large repositories into a database

- query data using databases and SQL

- use spreadsheet functions to manipulate data

- statistically analyse data in spreadsheets

- develop data visualisations.

Task time allocated should be at least 6–10 lessons.

Unit 3 Outcome 2: Data analytics: analysis and design

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.

Unit 3 Outcome 2: Data analytics: analysis and design

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 Data Analytics

Major changes to Unit 4 DA

- **Outcome 1:**
  - Statistical analysis
  - Updated assessment task (SAT)

- **Outcome 2:**
  - Emerging trends
  - Cryptography
  - Updated assessment task (SAC)

Unit 4 Outcome 1: Data analytics: development and evaluation

Outcome 1

- Develop and evaluate infographics and/or dynamic data visualisations that meet requirements and assess the effectiveness of the project plan.

Unit 4 Outcome 1: Data analytics: development and evaluation

Outcomes	Assessment tasks
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** • an evaluation of the efficiency and effectiveness of infographics and/or dynamic data visualisations • an assessment of the effectiveness of the project plan (Gantt chart) in monitoring project progress in one of the following: • a written report • an annotated visual plan. Time allocated should be at least 8 weeks of class time.

Unit 4 Outcome 2: Cyber security: data security

Outcome 2

- 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.

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Unit 4 Outcome 2: Cyber security: data security

Contribution to final assessment

- School-assessed Coursework for Unit 4 will contribute 10 per cent to the study score.

- Total marks – 100

Assessment task

The student's performance will be assessed using one of the following:

- structured questions

- a report in written format

- a report in multimedia format.

The case study scenario needs to enable:

- an analysis of the breach

- an evaluation of the threats

- recommendations to improve security strategies.

Task time allocated should be 100–120 minutes.

Unit 3 Software Development

Major changes to Unit 3 SD

- **Outcome 1:**
  - Emerging trends
  - OOP
  - Errors
  - Updated assessment task (SAC)

- **Outcome 2:**
  - Brief
  - OOP
  - File management
  - Ideation techniques
  - Updated assessment task (SAT)

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Unit 3 Outcome 1: Software development: programming

Outcome 1

- Interpret teacher-provided solution requirements and designs and use appropriate features of an object-oriented programming language to develop working software modules.

Unit 3 Outcome 1: Software development: programming

Contribution to final assessment

- School-assessed Coursework for Unit 3 will contribute 10 per cent to the study score.

- Total marks – 100

Assessment task

In response to teacher-provided solution requirements and designs, develop four working modules with increasing complexity of programming skills.

- Module 1: Simple calculations using arithmetic, logical and conditional operators

- Module 2: Reading and writing files

- Module 3: Sorting and searching with functions or methods

- Module 4: Classes and objects

At least two modules must include a GUI.

All modules must include testing.

Task time allocated should be at least 8–14 lessons.

Unit 3 Outcome 2: Software development: analysis and design

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.

Unit 3 Outcome 2: Software development: analysis and design

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.	A brief outlining the proposed solution and a project plan (Gantt chart) indicating tasks, times, milestones, dependencies and the critical path **AND** Analytical tools that depict the interactions between systems, users, data and networks **AND** An analysis that defines the requirements, constraints and scope of a solution in the form of a software requirements specification **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 Software Development

Major changes to Unit 4 SD

- **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)

Unit 4 Outcome 1: Software development: development and evaluation

Outcome 1

- Develop and evaluate a software solution that meets requirements and assess the effectiveness of the project plan.

Unit 4 Outcome 1: Software development: development and evaluation

Outcomes	Assessment tasks
Unit 4 **Outcome 1** Develop and evaluate a software solution that meets requirements and assess the effectiveness of the project plan.	A software solution that meets the software requirements specification **AND** Preparation and conduction of beta testing **AND** - 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 in one of the following: - a written report - an annotated visual plan. Time allocated should be at least 8 weeks of class time.

Unit 4 Outcome 2: Cyber security: secure software development practices

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.

Unit 4 Outcome 2: Cyber security: secure software development practices

Contribution to final assessment

- School-assessed Coursework for Unit 4 will contribute 10 per cent to the study score.

- Total marks – 100

Assessment task

The student's performance will be assessed using one of the following:

- structured questions

- a report in written format

- a report in multimedia format.

The case study scenario needs to enable:

- an analysis of the organisation's software development practices

- an evaluation of the current security controls and threats

- recommendations to improve practices.

Task time allocated should be 100–120 minutes.

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