Sample Weekly Planner
Unit 3: Data analytics

Teachers can be flexible in the way they approach and deliver the two areas of study in Units 3 and 4. Two possible approaches are outlined below, either sequential or simultaneous. All units in the VCE are constructed on the basis of at least 50 hours of scheduled classroom instruction. Time allocations are suggested for each area of study in the sample planner.

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| **Sequential approach** |
| **Area of Study** | **Suggested time allocation (weeks)** |
| 1. Data analysis | Weeks 1–8\*\* |
| 2. Data analytics: analysis and design\* | Weeks 9–16\*\* |
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| **Simultaneous approach** |
| **Area of Study** | **Suggested time allocation (weeks)** |
| 3. Data analysis | Weeks 1–12\*\* |
| 4. Data analytics: analysis and design\* | Weeks 5–16\*\* |

\* Unit 3 Outcome 2 forms part of the School-assessed Task.

\*\* Please note that the duration of each area of study is indicative only.

The unit planner below represents a **sequential approach** to delivering Unit 3 Data analytics. It is a sample guide only and teachers are advised to consider their own contexts when implementing this unit and when developing learning activities. Consideration should be given to the student cohort and available resources. Teachers should modify this sample weekly planner according to relevant school events.

Teachers wishing to adopt the **simultaneous approach** (when a class is completing the SAT and working on a SAC) can modify this detailed planner accordingly.

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| **Week** | **Unit and area of study** | **Topic/description** | **Learning activities** |
| **Area of Study 1: Data analytics** |
| 1 | Unit 3 Area of Study 1 | Data concepts:* + why organisations acquire data
	+ data integrity
	+ efficient and effective data collection
	+ acquiring data from large repositories
	+ revised use of problem-solving methodology for data problems
 | * Discuss the outcome and inform students of U3O1 SAC dates and conditions, as per school guidelines.
* Extract different types of data from a range of large repositories.
* Investigate how organisations collect data, from surveys to user-provided data and logs.
* Understand the process that will be used for this area of study, based on the problem-solving methodology.
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| 2 | Unit 3 Area of Study 1 | Storage environments:* data types and naming conventions
* referencing (APA method)
* interpret solution requirements
 | * Complete a quiz identifying the correct data type for storage from a sample list, including mobile phone number, postcode, date of birth, fee payment (Y/N).
* Create a meaningful name for sample database elements / files.
* Provide a reference for data repositories downloaded using the APA method.

Note: As student assessment will be based on teacher-provided analysis and design, students need to practise identifying key data requirements from examples given by the teacher. |
| 3 | Unit 3 Area of Study 1 | Storage environments:* create a database structure
* use database-related design tools and techniques
 | * Design a data dictionary for storing data extracted from a data repository.
* Follow normalisation process to ensure data integrity in all tables.
* Develop a database with tables, records, forms and queries, including validation rules.
* Import data into the database, confirming that validation rules have been appropriately followed.
* Extract files in an appropriate format (e.g. CSV) from the database using SQL or other query design tools for later manipulation with a spreadsheet.
* Note: As student assessment will be based on teacher-provided analysis and design, students need to be able to interpret solution design documents related to building and extracting data from a database.
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| 4 | Unit 3 Area of Study 1 | Spreadsheets and analytics:* extract data from database using queries
* manipulate and cleanse data to prepare for visualisation
* understand solution requirements for data manipulation in spreadsheets
 | * Develop summary information about the data extracted from the database using spreadsheet formulas and functions.
* Compare different ways data can be laid out in a spreadsheet to allow for data visualisation charts of different types to be created.
* Practise converting data from a database extract file into an appropriate layout for visualisation.
* Create a list of instructions to convert data sourced from database into a format ready for visualisation – this could be converted into a macro (with appropriate internal documentation).

Note: As student assessment will be based on teacher-provided analysis and design, students need to be able to interpret solution design documents related to manipulating and analysing data in a spreadsheet. |
| 5 | Unit 3 Area of Study 1 | Data visualisations:* types and purposes of data visualisations
* formats and conventions appropriate to data visualisation

Introduce SAT to students | * Compare a range of data visualisations and their purposes. Teachers should ensure that examples of charts, histograms, graphs, maps, network diagrams and spatial relationships are included in this range.
* Identify data sources and formats required to create data visualisations given previously for comparison.
* Develop a list of formats and conventions for data visualisations.

**Preparing students for the Unit 3 Outcome 2 SAT**Outline the SAT to students by going through requirements of the task, administration and compliance within the task, and the establishment of processes for authentication.Students should also to begin thinking about topics for their research question. |
| 6 | Unit 3 Area of Study 1 | Creating data visualisations:* select, justify and apply functions, formats and conventions to create effective data visualisations
 | * Use a range of functions to create data visualisations.
* Create data visualisations for a range of purposes. Students need to be provided with appropriately manipulated data – their concentration should be towards the creation of the data visualisations.
* Explain the use of formats (including font style and colours used) and conventions (including key elements in charts; e.g. titles, axes, legend) used in data visualisations created.
* Include appropriate referencing on each data visualisation to acknowledge original data owners.
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| 7 | Unit 3 Area of Study 1 | Evaluation and interpretation:* validation of data included in a visualisation
* testing of data visualisations
* interpretation of data to create findings and conclusions

Students working on their SATSAT authentication session | * Check that the content of data visualisations matches to source data.
* Test to see that data visualisations work as expected.
* Develop a list of findings from data visualisations.

**Preparing students for the Unit 3 Outcome 2 SAT**Check that students have made progress in finding an appropriate topic for their research question. |
| 8 | Unit 3 Area of Study 1 | **Unit 3 Outcome 1 SAC** | **Unit 3 Outcome 1 SAC**Students interpret teacher-provided solution requirements and designs to extract data from large repositories into databases and spreadsheets. They use software to develop and test a software solution that presents the findings extracted from the data. * The task should be created to complete within 8–10 lessons, with students being able to demonstrate all of the Very High areas of the Performance Descriptors.
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| **Area of Study 2: Data analytics: analysis and design** |
| 9 | Unit 3 Area of Study 2 | Project management:* processes and concepts
* find critical path for a list of tasks
* use software to create a visual representation of project tasks

Students working on their SATSAT authentication session | * Develop Gantt charts and project plans in relation to medium and long-term activities/events and progress.
* Revise problem-solving methodology used as a framework to complete a longer-term project.

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 10 | Unit 3 Area of Study 2 | Research question and requirements:* create research question as an information problem
* understand data requirements
* project scope responding to constraints (time, data collection)

Students working on their SATSAT authentication session | * Create a research question ensuring that requirements, constraints and scope are fully detailed within the statement.
* Develop a list of data requirements including: data type, number of records required, expected data, anticipated output needs.

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 11 | Unit 3 Area of Study 2 | Gather and analyse datasets:* data collection methods and techniques
* data referencing systems and examples
* legal requirements for collection of data

Students working on their SATSAT authentication session | * Collect and appropriately reference data from different sources (primary/secondary).
* Collect data using different techniques (observation/survey/extraction).
* Collect different types of data (text, number, audio, video and image).
* Collect digital and non-digital data ensuring legal compliance (e.g. use of consent forms).
* Organise data collected into storage ensuring legal compliance for storage and use (e.g. completing de-identification as needed).

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 12 | Unit 3 Area of Study 2 | Data integrity:* data referencing
* coding qualitative data
* measures of data integrity

Students working on their SATSAT authentication session | * Reference all data that is collected from a reputable secondary source using the APA method.
* Code qualitative data into a quantitative form for visualisation.
* Convert non-digital data into a digital format.
* Check the integrity of data collected to ensure that it is accurate, authentic, correct, reasonable, relevant and timely.

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |

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| 13 | Unit 3 Area of Study 2 | Protecting data integrity:* legal requirements
* data collection
* security – physical and software controls used to protect data and information that is stored and communicated

Students working on their SATSAT authentication session | * Students should have finalised their research activities for their SAT to allow time for developing a detailed design.
* Understand the link between threats to data and information, and the physical and software security controls that are put in place to mitigate such threats.
* Complete initial analysis of data to understand initial trends and findings that will enable a more accurate design to be completed.

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 14 | Unit 3 Area of Study 2 | Designing data visualisations:* design tools for functionality and appearance for dynamic data visualisations and infographics
* design principles

Students working on their SATSAT authentication session | * Analyse the differences between dynamic data visualisations, data visualisations and infographics.
* Build data visualisations that allow interpretation of current data. (Note: students will need to create some data visualisations for their personal analysis of data, but their project output needs to contain the design, development and evaluation of dynamic data visualisations and infographics.)
* Understand that there are findings that need to be communicated from the source data.
* View and create examples of a range of data visualisations (including dynamic) and infographics and explain how they adhere to design principles.

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 15 | Unit 3 Area of Study 2 | Generating design ideas:* evaluation criteria for designs
* ideation techniques

Students working on their SATSAT authentication session | * Generate a range of data visualisation ideas based on teacher-provided case studies.
* Review high-quality data visualisations and identify key design elements and how these visualisations meet user requirements.
* List the requirements for a detailed design that will enable a data visualisation to be completed by any skilled developer that matches the design.

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |

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| 16 | Unit 3 Area of Study 2 | Creating a detailed design:* adding required detail to a design to assist with Unit 4 development work on the SAT

Students working on their SATSAT authentication sessionSAT Submission\* | * Critically evaluate each design idea generated using criteria and make an informed decision on a preferred model.
* Add clarity and detailed instructions to the preferred design idea to finalise a detailed design for the infographics and/or dynamic data visualisations that will be developed in Unit 4.

**Unit 3 Outcome 2 SAT Authentication**Students work on Criteria 1–5 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form.**Unit 3 Outcome 2 SAT Submission**Students submit SAT Criteria 1–5 to be assessed against the VCAA performance descriptors. |

\*SAT Submission date/s should take into account the following:

* Internal school programs and key dates
* Sufficient time to assess and moderate student submissions
* Sufficient time to enter SAT criteria scores into VASS.