Sample Weekly Planner
Unit 4: Data analytics

The unit planner below represents a **simultaneous approach** (when a class is completing the SAT and working on a SAC) to delivering Unit 4: 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.

Those wishing to adopt the **sequential approach** can modify this detailed planner accordingly.

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| **Sequential approach** |
| **Area of Study** | **Suggested time allocation (weeks)** |
| 1. Data analytics: development and evaluation\* | Weeks 1–8\*\* |
| 2. Cybersecurity: data and information security | Weeks 9–13\*\* |

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| **Simultaneous approach** |
| **Area of Study** | **Suggested time allocation (weeks)** |
| 1. Data analytics: development and evaluation\* | Weeks 1–14\*\* |
| 2. Cybersecurity: data and information security | Weeks 9–13\*\* |

\* Unit 4 Outcome 1 forms part of the School-assessed Task.

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

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| **Week** | **Unit and area of study** | **Topic/description** | **Learning activities** |
| **Area of Study 1: Data analytics: development and evaluation** |
| 1 | Unit 4 Area of Study 1 | Project and file management:* recording progress of project
* adjusting project schedule
* updating diary for project
* file management and security

Presenting findings:* organising information
* information characteristics to educate target audiences including age, language, culture and gender

Students working on their SATSAT authentication session | * Examine sample project change and issue logs to document changes made to detailed designs within projects and to record all development issues.
* Use examples of incidents that occur within a project that impact on the schedule, such as school assemblies and incursions. Review the process of annotating a Gantt chart with changes made.
* Discuss file management strategies, including the extent and timing of backups required and security protocols needed to secure data. Students then conduct their own research and recommend an appropriate file management strategy.
* Practise applying the skill of information architecture (using an information hierarchy) to place the most important information in the most prominent places in a document.
* View a diverse range of visualisations (infographics and dynamic data visualisations) with different information purposes and document how the characteristics of information for educating target audiences have been used, including being able to present a message.
* Document the difference between dynamic data visualisations and infographics.

**Preparing students for the Unit 4 Outcome 1 SAT**Teachers should review SAT requirements for U4 O1 with students by going through the requirements of the task, administration and compliance within the task and the establishment of processes for authentication.**Unit 4 Outcome 1 SAT Authentication**Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 2 | Unit 4 Area of Study 1 | Effectiveness of data visualisations:* demonstration of effective data visualisations
* knowing the intended message and audience

Data manipulation for preparing visualisations:* methods and techniques of data manipulation

Students working on their SATSAT authentication session | * Discuss in small groups the features a sample range of visualisations use that makes them effective.
* Examine and analyse the data collected in Unit 3 and state concisely the main findings from the data. This allows the student to know the data story to educate a target audience about.
* Understand how using the descriptors of effective data visualisations and infographics can improve the output of a project.
* Practise the use of formula sheets (data formula layouts) within a spreadsheet to create a range of charts, including bar, column, stacked, line, multiple line, scatter, radar, world maps.
* Explore a range of methods and techniques to change the structure of data to best suit the visualisation required, including the use of database query criteria, spreadsheet functions such as transpose, grouping data into categories and summary functions to reorganise data into a more appropriate structure for visualisation.
* Revise methods to present qualitative data, including coding into quantitative data, and highlight quotes that can be added directly into an infographic for impact.

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| 3 | Unit 4 Area of Study 1 | Techniques for creating infographics:* interpreting designs
* software functions to create infographics and dynamic data visualisations

Students working on their SATSAT authentication session | * Compare the main features of infographic and dynamic data visualisation software tools.
* Create examples of infographics using appropriate software, for example Infogram, Visually or Canva.
* Structure a data visualisation using information architecture principles to place important information in prominent positions.
* Build a dynamic data visualisation or infographic from a detailed design.

**Unit 4 Outcome 1 SAT Authentication**Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 4 | Unit 4 Area of Study 1 | Techniques for creating dynamic data visualisations:* interpreting designs
* software functions to create infographics and dynamic data visualisations

Students working on their SATSAT authentication session | * Review software packages that students can use to build their design of a required visualisation.
* Understand strengths and weaknesses of applications when creating data visualisations.
* Create examples of dynamic data visualisations using appropriate techniques, for example morph function in Microsoft PowerPoint, pages in Tableau, or 3D Map in Microsoft Excel.
* Create a dynamic data visualisation that is responsive to user input including embedding Google Sheets responses or allowing certain sections of the visualisation to change visibility according to user mouse clicks.
* Use video media techniques to add motion capability to a chart.
* Use augmented reality by using a visual trigger to activate a change in the vision of data.
* Build a dynamic data visualisation or infographic from a detailed design.

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| 5 | Unit 4 Area of Study 1 | Efficient and effective data solutionsEvaluation strategies:* evaluating the success of a solution
* evaluating the usefulness of a project plan

Students working on their SATSAT authentication session | * Review the characteristics of a successful data solution developed in the design stage (evaluation criteria) and update to create a rubric to effectively assess this aspect of the SAT project.
* Develop a plan to respond to feedback such as negative tests, and use these responses to improve the finished product.
* Practise creating a review of sample project plans and actual results, including all key areas within a report.
* Critically review project plan including the use of evidence such as project journals and change logs.

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| 6 | Unit 4 Area of Study 1 | Validation techniques:* manual and automated validation and verification of data visualisations including proofreading, spelling and grammar checks, and data point checking

Testing:* testing techniques to ensure solution works as intended.

Students working on their SATSAT authentication session | * Use manual and automated validation and verification techniques to ensure data that has been entered on the visualisation is accurate and reasonable.
* Write instructions for a test plan that another person will execute, including a detailed instruction and expected result for each activity.
* Create a schedule for undertaking a testing plan, including time allocated for unit testing and user acceptance testing.
* Test all features of the solution’s functionality

– ease of use, error tolerance, accessibility* Test all features of the solution’s appearance – communication of message.
* Correct all errors identified and dedicate the time required to re-test and improve the end product.

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| 7 | Unit 4 Area of Study 1 | Students working on their SATSAT authentication sessions | * Continue to work on development and evaluation activities for the SAT, with regular authentication to be completed by the teacher each session to update progress.

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| **Area of Study 2: Cybersecrity: data and information security** |
| 9 | Unit 4 Area of Study 2 | IntroductionNetwork characteristics:* data importance to organisations
* network characteristics
* threats to data and information
* physical and software security controls
* network storage/cloud computing

Students working on their SATSAT Authentication sessions | * First class includes a discussion of the outcome, the timeline and when assessment will occur.
* Revise why data and information is critical to an organisation.
* Practise linking a diverse range of security threats (including accidental, deliberate and vent-based) to the logical physical and software security controls that are used to mitigate these threats.
* Discuss links between an organisation’s goals and their information system goals.
* Compare the advantages and disadvantages of using wired, wireless and mobile networks.
* Identify, compare and contrast strengths and weaknesses of local storage vs. cloud.
* Compare the benefits of different backup strategies (location – on/off site, frequency, scope – full, incremental, differential) and document situations in which these options would be best employed.

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| 10 | Unit 4 Area of Study 2 | Legal and ethical issues:* legislation that affects collection, storage, communication and disposal of both data and information
* ethical issues and resolving stakeholder concerns

Students working on their SATSAT Authentication sessions | * Understand and document the different applications of key privacy and intellectual property legislation to organisations.
* Know the key characteristics of an ethical dilemma.
* Develop a process to follow to resolve stakeholder concerns in an area of ethical concern using the Australian Computing Society Code of Conduct as a starting point.

**Unit 4 Outcome 1 SAT Authentication**Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 11 | Unit 4 Area of Study 2 | Examining threats:* understanding the need to prepare disaster recovery plans
* consequences of ineffective and inefficient data and information security strategies
* data integrity

Students working on their SATSAT Authentication sessions | * Develop a sample disaster recovery plan for an organisation of choice (e.g. local school) that includes all parts: evacuation, backup, recovery and testing.
* Discuss situations that would require a disaster recovery plan to be enacted, with focus on those that have occurred at the school over their time (e.g. power outage, partial evacuation).
* Document the processes that schools use to conduct and review evacuation testing.
* Using internet resources, investigate the failure rate of businesses with ineffective data and information management processes.
* Discuss methods that businesses can use to ensure that high quality data is able to be collected, secured and maintained.

**Unit 4 Outcome 1 SAT Authentication**Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 12 | Unit 4 Area of Study 2 | Evaluating data and information strategies:* criteria for evaluating strategies

Students working on their SATSAT Authentication sessions | * Identify the key characteristics with which to evaluate data and information management strategies.
* Document situations where an organisation both achieves and does not achieve: currency of files, ease of retrieval, integrity of data and security.
* Respond to a teacher-provided context and provide documentation of data and information management strategies, knowledge of possible legal and ethical breaches and recommendations for improvements.

**Unit 4 Outcome 1 SAT Authentication**Students work on Criteria 6–10 during class time.Students meet with teacher to monitor progress and update the Authentication Record Form. |
| 13 | Unit 4 Area of Study 2 | **Unit 4 Outcome 2 SAC** | **Unit 4 Outcome 2 SAC****Outcome:** Respond to a teacher-provided case study to investigate current data and information security strategies of an organisation, examine the threats to the security of data and information, and recommend strategies to improve practices.**Timeframe:** 1–2 hours**Format (teacher discretion):**Case study with:* structured questions
* a written report
* a multimedia report

**Task:** Students respond to a teacher-provided case study using one of the approved formats. |
| 14 | Unit 4 Area of Study 2 | Examination preparationSAT Submission\* | * Referring to previous examinations, complete and review examination questions in one of the formats that are present in the examination – case study questions.
* Review past Examination Reports and take note of examination questions that have caused problems in the past. Complete samples of these questions to build understanding.
* Students submit all of their SAT work as a final submission, ensuring that all work completed outside of class can be appropriately authenticated and explained by students.

**Unit 4 Outcome 1 SAT Submission**Students submit SAT Criteria 6–10 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.