VCE Systems Engineering:  
Administrative information for School-based Assessment in 2023

Units 3 and 4

School-assessed Task

The School-assessed Task (SAT) contributes 50 per cent to the study score and is commenced in Unit 3   
and completed in Unit 4.

Teachers will provide to the Victorian Curriculum and Assessment Authority (VCAA) a score against each criterion that represents an assessment of the student’s level of performance for Unit 3 Outcome 1 and   
Unit 4 Outcome 1. The recorded scores must be based on the teacher’s assessment of the student’s performance according to the criteria on pages 7–14. This assessment is subject to the VCAA’s statistical moderation process.

The 2023 Systems Engineering assessment sheet on page 20 is to be used by teachers to record scores. The completed assessment sheet must be made available on request by the VCAA.

The mandated assessment criteria are published annually on the Systems Engineering study page of the VCAA website and notification of their publication is given in the February *VCAA Bulletin*.

Details of authentication requirements and administrative arrangements for SATs are published annually   
in the [*VCE and VCAL Administrative Handbook 2023*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx).

The Authentication record form on pages 17–19 is to be used to record information for each student and must be made available on request by the VCAA.

The SAT has two components:

* Unit 3 Outcome 1
* Unit 4 Outcome 1.

Teachers should be aware of the dates for submission of scores into VASS in July and November.

These dates are published in the [2023 Important Administrative Dates and Assessment Schedule](vcaa.vic.edu.au/pages/schooladmin/admindates/index.aspx), published annually on the VCAA website.

Unit 3

Integrated and controlled system

Outcome 1

On completion of this unit the student should be able to investigate, analyse and apply concepts and principles, and use components to design, plan and commence production of an integrated and controlled mechanical and electrotechnological system using the systems engineering process.

Nature of task

A **record** of investigation, design, planning and production.

**and**

Preliminary production work to create a mechanical and electrotechnological integrated and controlled system.

Unit 4

Systems control

Outcome 1

On completion of this unit the student should be able to finalise production, test and diagnose a mechanical and electrotechnological integrated and controlled system using the systems engineering process, and manage, document and evaluate the system and processes, as well as their use of it.

Nature of task

Completion of production work accompanied by a **record** of both progress and any modifications (images and text material).

**And**

A record of diagnostic testing and performance data.

**And**

A report that evaluates and suggests improvements to the system with reference to the factors that influenced its creation and to the student’s use of the systems engineering process.

Scope of task

The **record** of investigation, design, planning and production should reflect the systems engineering process within the cross-study specification on pages 9 and 10 of the *VCE Systems Engineering Study Design (2019–2024)* and the factors that may influence the design, planning, production and use of an integrated and controlled system.

The **record** must include the following:

* a **design brief**, developed by the student, which identifies and documents the problem/need/opportunity/ situation requiring a systems engineering solution, and the context, constraints and considerations that apply, including reference to the factors that may influence the design, planning production and use of   
  a system
* initial research and identification of existing components, systems or subsystems to produce the required outputs that could represent responses (in part or as a whole) to the design brief
* initial research regarding the function, operation, concepts and principles of existing components, systems or subsystems that may be used
* relevant criteria for evaluating the integrated, controlled system and the student’s use of the systems engineering process. These should be drawn from the **design brief** and link to the stages of the systems engineering process and factors that influence the creation and use of system. Evaluation criteria for the system can be written as a statement or question, with each having a justification and explanation of its relevance to the **design brief**, and how it can be checked or tested when the system is completed. Both qualitative and quantitative measures should inform the evaluation criteria
* research to produce ideas for the design options that addresses factors influencing the design, planning, production and use of the system, including function, user needs and requirements, components, materials, environment the system will be used in, safety, the ways waste and energy can be minimised as well as any associated costs. Additional factors may include: Australian and quality standards and regulations, appearance, performance and durability, size, maintenance requirements and production methods (including machinery and equipment needed to make the system). Students must accurately and systematically cite all primary and secondary sources of information used
* appropriate reference to the function and operation of mechanical and electrotechnological components (including those used for control), and the application of relevant concepts and principles in identifying options to respond to the requirements of the **design brief**. Calculations and modelling should be used to gain information about the function and/or performance of components, sub-systems and systems to achieve required outputs. Appropriate use should be made of diagrammatic and symbolic representation and technical language
* design alternatives and options and the selection of the preferred option. Three or four design options should be developed. The alternatives and options must repond to the **design brief** and describe components and subsystems that constitute potential solutions. Sketches, drawings and diagrams must show annotations and references to proposed specifications, processes, materials or components and their relevance to the design brief. The justification of the preferred option must be clearly indicated
* design and modelling of the integrated controlled system, using computer simulation and modelling, sketches, block (input-process-output [IPO]) and flow diagrams, working drawings, annotations and programming, for the configuration, assembly, integration and resourcing of manufactured systems, subsystems and components intended to produce an operational controlled system
* components and materials list, including sources and cost
* using a project management approach, the development of a production timeline and work plan including a sequence of operations, processes and intended tools, equipment and machines, proposed methods of diagnostic testing, for the manufacture of the mechanical and electrotechnological integrated and controlled system and all accompanying risk assessments for production work and diagnostic testing
* a record of progress that includes photographic evidence of production work (for example, logbook or photo journal), including decisions made and notes of modifications with justifications.

In Unit 4, the diagnostic testing report and performance data will include references to ongoing diagnostics and the adjustments or modifications made to ensure optimal performance, and also to the results of at least one test carried out on the student’s completed system to assess the functioning and performance of the integrated system with a control device.

When undertaking test procedures students need to document, using technical language:

* the purpose of the test
* procedural steps (including risk assessment and management) to perform the test, including the equipment used (documentation should include images)
* expected results
* actual results of the test in quantified (numerical) form, including international system [SI] units and technical terms
* application of formulas to calculate and determine theoretical mechanical and electrical parameters
* modification or repairs made as a result of the diagnostic testing
* explanation of the results.

Students are also required to produce an evaluation report. This report includes:

* an evaluation of the operational integrated controlled system
* an evaluation of the use of the systems engineering process, including effectiveness of documentation and efficiency of management of the project and their work processes and practices
* identification of how the factors that may influence the design, planning, production and use of the system that addresses the design brief were taken into account
* modifications and areas for further improvement in the system.

**One integrated controlled system** only is to be completed over Units 3 and 4. Students cannot score highly if the system is not integrated nor incorporates control – either as a closed or open loop. By the end of Unit 3 the production work should be partially constructed. By the end of Unit 4 the production work will result in an operational product in the form of an integrated system with some means of control, i.e. a system that is a functional integration of a mechanical subsystem (includes pneumatic, hydraulic) and an electrotechnological subsystem (includes microelectronic). All systems must be compliant with safety standards, regulations and Australian Standards. Risk assessment and risk management must be addressed throughout the design, planning, construction, testing and operation of the system, consistent with safety standards, laws and regulations. Teachers **must** record individual student adherence to safety procedures and project management on the Systems Engineering Teacher additional comment sheet.

Where appropriate, students should use information and communications technology (ICT) in the **record** of investigation, design, planning and production and documenting diagnostic testing and in the evaluation report.

Teachers must sight and monitor the development and documentation of the student’s work on a regular basis. The Authentication record form for the Systems Engineering SAT on pages 17–19 should be used for monitoring students’ work in progress for authentication purposes. These sheets must be available if requested by the VCAA.

**Note that for the SAT, students must work on their own design and production work. It is not a group project.**

Safety

Please refer to the information under Safety and welling on page 7 of the study design for specific information about electrical safety.

Advice on the Authentication record form

The purpose of the 2023 Systems Engineering Authentication record form on pages 17–19 is for the teacher to document student progress throughout the completion of the SAT.

Teachers should make ongoing notes of observations of each student during the production of the SAT on the Authentication record form, which provides teachers with the opportunity to present written information that may be required to support the School-based Assessment Audit. As the production work for the SAT occurs over a period of time, this form can also assist teachers in their record keeping. Teachers may find it useful to refer to the comments on this sheet when assessing the four criteria related to the production work. The criteria related to the production work for Systems Engineering are Criteria 4, 5, 6 and 7. These criteria relate to the key knowledge and key skills listed in the study design.

The following information and questions are provided to assist teachers with the type of information they should include on the 2023 Systems Engineering Authentication record form for these criteria. Teachers are not expected to separately address each question listed below for each student. Rather, the questions are intended to provide guidelines as to what information teachers could record.

Criterion 4: Use of tools, equipment and machines to make the system

* Did the student demonstrate competence and technical skill in the use of a range of tools, equipment and machines?
* Did the student safely carry out a range of processes (including simple and complex) in the production of the product? (Processes that are not evident in the **record** of design, planning and production or the production work could be noted.)
* Did the student follow their own or teacher-generated risk management processes?
* Did the student show a practical understanding of the relationship between the production sequence, processes and timelines?
* Did the student show a practical understanding of systems concepts and principles?
* Was there a level of independence demonstrated by the student when applying the processes?

Criterion 5: Realisation of an integrated controlled system

* Is the product functional or non-functional (or has it at some stage been functional)? (Please note that functionality or performance of the product may relate to the way the student has used the tools and equipment.)
* What is the appearance like? (Parts that may be hidden should be considered in making this comment.)
* Does the product perform in the intended way (i.e. the expected output) as outlined in the design and production work plan or as documented in the modifications?

Criterion 6: Use of diagnostic test procedures and interpreting test data

* Has the student been able to plan and carry out diagnostic testing with little assistance and direction?
* Have appropriate procedures been followed?
* Was testing equipment (devices to locate faults and measure performance) selected and used appropriately and accurately?
* Did the student use relevant technical information to assist in planning and carrying out test procedures (if not included in documentation)?
* Did the student make necessary modifications or carry out repairs so the systems would work or perform more effectively?

Criterion 7: Project management to realise the preferred option

* Was the student well organised?
* Did the student use time efficiently?
* Did the student use resources effectively and efficiently?
* Did the student make appropriate selections and use of materials, components, methods of assembly and conventions? Did the student make these selections independently and/or follow advice given by the teacher?

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| 1. **Investigation of a problem/situation/ opportunity/need and develop a design brief for  an integrated controlled system including evaluation criteria** | * identifies problem/situation/ opportunity/need * develops design brief for an integrated controlled system * responds to design brief * develops evaluation criteria * references factors that influence the creation and use of system | Insufficient evidence | Identifies a problem/ situation/opportunity/need and develops a design brief for an integrated controlled system, identifies its context, constraints and/or considerations | Identifies a problem/ situation/opportunity/need and develops a design brief for an integrated controlled system, identifies its context, constraints and considerations | Identifies a problem/ situation/opportunity/need and develops a design brief for an integrated controlled system, outlines its context, constraints and considerations | Identifies a problem /situation/opportunity/need and develops a design brief for an integrated controlled system, describes its context, constraints and considerations | Identifies a problem/ situation/opportunity/need and develops a design brief for an integrated controlled system, explains its context, constraints and considerations |
| Develops evaluation criteria and identifies factors that influence the creation and use of the system | Develops evaluation criteria and outlines how the evaluation criteria relate to the requirements of the design brief and factors that influence the creation and use of the system | Develops evaluation criteria and describes how the evaluation criteria relate to the requirements of the design brief and factors that influence the creation and use of the system | Develops evaluation criteria and explains how the evaluation criteria relate to the requirements of the design brief and factors that influence the creation and use of the system | Develops evaluation criteria and justifies how the evaluation criteria relate to the requirements of the design brief and factors that influence the creation and use of the system |
| 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| **2. Researching, devising, designing and modelling design options** | * conducts research including modeling of components, subsystems, systems * generates design ideas * produces feasible design options * selects preferred option | Insufficient evidence | Undertakes research, including modeling, of components, subsystems and/or processes to generate design ideas using diagrams, to identify feasible design options and the preferred option | Undertakes research, including modeling, of components, subsystems and processes to generate design ideas using diagrams and/or technical data to identify feasible options and the preferred option | Undertakes research, including modeling, of components, subsystems and processes to generate design ideas using diagrams and technical data to describe feasible options and the preferred option | Undertakes research, including modeling, of components, subsystems and processes to generate design ideas using diagrams and technical data to explain feasible options and the preferred option | Undertakes research, including modeling, of components, subsystems and processes to generate design ideas, using diagrams and technical data to justify feasible options and the preferred option |
|  |  | 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| **3. Planning the creation of the system** | * devises workplan (timeline, sequence of steps and associated equipment, components, materials, and processes) * references materials, components and processes * describes safety and risk assessment for materials, components and processes | Insufficient evidence | Develops a work plan by identifying steps, timeline, materials, components, processes and tools for the creation of the preferred option, as well as identifying safety and risk assessment. | Develops a work plan by identifying a sequence of steps and timeline, materials, components, processes and tools for the creation of the preferred option, and describing safety and risk assessment. | Develops a work plan by identifying a sequence of steps and timeline, and describes how materials, components, processes and tools will be used for the creation of the preferred option as well as describing safety and risk assessment. | Develops a work plan by identifying a sequence of steps and timeline, and explaining how materials, components, processes and tools will be used for the creation of the preferred option, as well as describing safety and risk assessment. | Develops a work plan by identifying a sequence of steps and timeline, and analysing how materials, components, processes and tools will be used for the creation of the preferred option, as well as describing safety and risk assessment. |
|  |  | 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| **4. Use of tools, equipment and machines to make the system** | * implements work plan * complies with OH&S requirements | Insufficient evidence | Follows the steps and timelines in the work plan with support using production processes, and tools, equipment, components and materials compliant with OH&S requirements to produce preferred option. | Implements a work plan with support using production processes, and tools, equipment, components and materials compliant with OH&S requirements to produce preferred option. | Implements a work plan with support using production processes, and tools, equipment, components and materials with technical skills, compliant with OH&S requirements to produce preferred option. | Implements a work plan independently using production processes, and tools, equipment, components and materials with technical skills, compliant with OH&S requirements to produce preferred option. | Implements a work plan independently using production processes, and tools, equipment, components and materials with precision and technical skills, compliant with OH&S requirements to produce preferred option |
| 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| **5. Realisation of  an integrated controlled system** | * produces integrated, controlled system | Insufficient evidence | With support, produces an integrated, controlled system that is linked to the design brief | With support, produces an integrated, controlled system that addresses the context, considerations and/or constraints of the design brief | With support, produces an operational, integrated, controlled system that addresses the context, considerations and constraints of the design brief as described in the work plan with documented modifications | Independently produces an operational, integrated, controlled system that addresses the context, considerations and constraints of the design brief as described in the work plan and/or with documented modifications | Independently produces an operational, integrated, controlled system that addresses the context, considerations and constraints of the design brief and as described in the work plan with documented modifications. |
|  | 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| **6. Use of diagnostic test procedures and interpreting test data** | * identifies diagnostic tests * provides reason for diagnostic tests * explains how to set up diagnostic tests * conducts tests * generates and uses test data | Insufficient evidence | Uses diagnostic tests to generate test data. | Uses diagnostic tests to generate and describe test data. | Identifies reasons for diagnostic tests and conducts these tests to generate and describe test data. | Identifies reasons for diagnostic tests and conducts these tests to generate and explain test data. | Identifies reasons for diagnostic tests and conducts these tests to generate, analyse and interpret test data. |
|  |  | 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| **7. Project management to realise the preferred option** | * manages production of system * documents decision-making, modifications and justifications | Insufficient evidence | With support, demonstrates skills in time management and/or organisation to produce the preferred option, identifies evidence of progress and risk assessments for production work and diagnostic testing and identifies modifications if required | With support, demonstrates skills in time management and/or organisation to produce the preferred option, outlines evidence of progress and risk assessments for production work and diagnostic testing, and identifies decision-making and modifications if required | With support demonstrates skills in time management and organisation to produce the preferred option, outlines evidence of progress, risk assessments for production work and diagnostic testing and describes decision-making and modifications if required | Independently demonstrates skills in time management and organisation to produce the preferred option, describes evidence of progress and risk assessments for production work and diagnostic testing and explains decision-making and modifications if required | Independently demonstrates skills in time management and organisation to produce the preferred option independently, describes evidence of progress and risk assessments for production work and diagnostic testing and justifies decision-making and modifications if required |
| 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

| **VCE Systems Engineering: School-assessed Task Assessment Sheet 2023** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment criteria** | **Levels of performance** | | | | | | |
| **Indicators** | **Not shown** | **1–2 (very low)** | **3–4 (low)** | **5–6 (medium)** | **7–8 (high)** | **9–10 (very high)** |
| **8. Evaluating the use of the systems engineering process, including finished, integrated controlled system** | * evaluates design * evaluates production (materials, tools, processes) * tests and evaluates system | Insufficient evidence | Uses the systems engineering process including diagnostic testing and pre-determined evaluation criteria to identify performance of the system and/or recommendations to the design, production and performance of the system | Uses the systems engineering process including diagnostic testing and the pre-determined evaluation criteria to describe the performance of the system and identify recommendations to the design and production of the system | Uses the systems engineering process including diagnostic testing and the pre-determined evaluation criteria to explain the performance of the system and identify recommendations to the design and production of the system | Uses the systems engineering process including diagnostic testing and the pre-determined criteria to evaluate the performance of the system and describe recommendations to the design and production of the system | Uses the systems engineering process including diagnostic testing and the pre-determined criteria to evaluate the performance of the system and explain recommendations to the design and production of the system |
| 0 ❑ | 1 ❑ 2 ❑ | 3 ❑ 4 ❑ | 5 ❑ 6 ❑ | 7 ❑ 8 ❑ | 9 ❑ 10 ❑ |

Authentication of VCE Systems Engineering School-assessed Task (SAT)

Teachers are reminded of the need to comply with the authentication requirements specified in the [*VCE and VCAL Administrative Handbook 2023*](https://www.vcaa.vic.edu.au/administration/vce-vcal-handbook/Pages/index.aspx). This is important to ensure that ‘undue assistance [is] not … provided to students while undertaking assessment tasks’.

Teachers must be aware of the following requirements for the authentication of VCE Systems Engineering SATs:

1. The Systems Engineering mechanical and electrotechnological integrated and controlled system created for the SAT is based on Unit 3, Outcome 1 and Unit 4, Outcome 1.
2. Teachers are required to fill out the Authentication record forms and provide the student with feedback on their progress at each observation.
3. Students are encouraged to research all aspects of their proposed production in detail, but the work undertaken for their **record** of investigation, design, planning and production must be their own. Teachers are reminded that it is not appropriate to provide ‘detailed advice on, corrections to, or actual reworking of students’ drafts or productions or folios’.
4. The SAT is not a group project and students must work on their own design and production work for the entire SAT.
5. During the planning stage, teachers should make clear to students that the written documentation and visual representations, required as part of the student’s **record** of investigation, design, planning and production, form the basis for authentication of their work. For example, students are required to submit sketches, drawings and diagrams to show annotated references to proposed specifications, processes, materials or components and the relevance to the **design brief**. All notes should be dated and clearly documented to enable teachers to authenticate students’ work.
6. The annotated design options are part of the student’s **record** of investigation, design, planning and production, and are a key reference for assessment of the system, which should be maintained and updated throughout the production process. The student’s **record** of investigation, design, planning and production, together with the Authentication record form, informs the teacher about how the student refers to the proposed specifications, processes, materials or components and their relevance to the **design brief**.
7. Teachers must sight and monitor the development and documentation of the student’s work on a regular basis in order to record each student’s progress as part of the authentication process. The Authentication record form for the Systems Engineering SAT sheet must be completed by the class teacher to monitor the student’s work-in-progress for authentication purposes. The student must declare that all resource materials and assistance used have been acknowledged and that all unacknowledged work is their own.
8. Teachers should also make ongoing notes of observations of each student during the production of the SAT on the Authentication record form. The Authentication record form provides teachers with the opportunity to present written information that may be required to support the School-based Assessment Audit. As the production work for the SAT occurs over a period of time, this form can also assist teachers in their record keeping. Teachers may find it useful to refer to the comments on the sheet when assessing the four criteria related to the production work. Some skills, particularly those relating to the use of tools, equipment, machines and safety measures may not be clearly documented by the student. Risk assessment and risk management must be addressed throughout the design, planning, construction, testing and operation of the integrated controlled system, consistent with safety standards, laws and regulations. Teachers should supply written information based on observations of the student during practical work sessions, including individual student adherence to safety procedures and project management, on the Systems Engineering Authentication record form.
9. Any use of external support and/or equipment must be documented in the student’s **record**  of investigation, design, planning and production (for example, if a student uses equipment sourced from outside the school or uses prefabricated material, such as a powder coated steel frame or a complex circuit board, as part of their integrated controlled system). This is to ensure that any use of external support and/or equipment is appropriately limited and that the student does not receive undue assistance. All use of external support must be planned and documented in the student’s **record** of investigation, design, planning and production and teachers must certify that such support does not constitute undue assistance.
10. Photographs and video taken during the production process must be true and accurate representations of a student’s work. This ensures the integrated controlled system can be authenticated as a realisation of the design brief developed by the student and that the student is not receiving undue assistance in the production stage. This in turn ensures that all students are assessed equitably. All photographs and video should be dated.
11. Teachers are reminded that the authentication procedures are required to be followed for all student work in relation to this SAT. The School-based Assessment Audit includes the inspection of Authentication record forms. Authentication record forms will also be required to be forwarded for all works nominated for Seasons of Excellence awards in 2024. Incomplete Authentication record forms will result in an automatic disqualification of the student work from the nomination process.

Authentication record form: VCE Systems Engineering School-assessed Task 2023

This form must be completed by the class teacher. It provides a record of the monitoring of the student’s work in progress for authentication purposes. This form is to be retained by the school and filed. It may be collected by the VCAA as part of its School-based Assessment Audit.

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Student name ………………………………………………………………………………. Student No.

School…………………………………………………………………………………………Teacher ……………………………………..…………………………………………….

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Assessment criteria for School-assessed Task | Indicators | Date observed/ submitted | Authentication issues/comments | Teacher’s initials | Student’s initials |
| **1. Investigation of a problem/situation/ opportunity/need and develop a design brief for an integrated controlled system including evaluation criteria** | * identifies problem/situation/ opportunity/need |  |  |  |  |
| * develops design brief for an integrated controlled system |  |
| * develops evaluation criteria |  |  |  |
| * responds to design brief |  |
| * references factors that influence the creation and use of system |  |
| **2. Researching, devising, designing and modelling design options** | * conducts research including modeling of components, subsystems, systems |  | **(Note: all resources must be acknowledged)** |  |  |
| * generates design ideas |  |  |  |
| * produces feasible design options |  |  |  |
| * selects preferred option |  |
| **3. Planning the creation of the system** | * devises workplan (timeline, sequence of steps and associated equipment, components, materials, and processes) |  |  |  |  |
| * references materials, components and processes |  |  |  |
| * describes safety and risk assessment for materials, components and processes |  |  |  |
| **4. Use of tools, equipment and machines to make the system** | * implements work plan |  |  |  |  |
| * complies with OH&S requirements |  |  |  |
| **5. Realisation of an integrated controlled system** | * produces integrated, controlled system |  | **(Note: all outsourced processes must be recorded. At least three observations need to be recorded)** |  |  |
| **6. Use of diagnostic test procedures and interpreting test data** | * identifies diagnostic tests |  |  |  |  |
| * provides reason for diagnostic tests |  |
| * explains how to set up diagnostic tests |  |  |  |
| * conducts tests |  |
| * generates and uses test data |  |  |  |
| **7. Project management to realise the preferred option** | * manages production of system |  |  |  |  |
| * documents decision-making, modifications and justifications |  |  |  |
| **8. Evaluating the use of the systems engineering process, including finished, integrated controlled system** | * evaluates design |  |  |  |  |
| * evaluates production (materials, tools, processes) |  |  |  |
| * tests and evaluates system |  |  |  |

I declare that all resource materials and assistance used have been acknowledged and that all unacknowledged work is my own.

Student signature …………………………………………………………………… Date …………………………………

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2023** | Victorian Certificate of Education  System Engineering Assessment Sheet  School-assessed Task | | | | | | | | STUDENT NAME | | | | | | | | | |
| This assessment sheet will assist teachers to determine their score for each student. Teachers need to make judgments on the student’s performance for each criterion. Teachers will be required to choose one number from 0–10 to indicate how the student performed on each criterion with comments, as appropriate.  Teachers then add the subtotals to determine the total score. | | | | | | | | | student number |  |  |  |  |  |  |  |  |  |
| assessing school number | | | | |  |  |  |  |  |
|  | | | | | | | | |  | | | | | | | | | |
| **Criteria for the award of grades** | | | Not Shown (0) | Very Low (1–2) | Low  (3–4) | Med  (5–6) | High  (7–8) | Very High (9–10) | **Performance on Criteria: Teacher’s Comments**  You may wish to comment on aspects of the student’s work that led to your assessment. | | | | | | | | | |
| The extent to which the record of investigation design, planning and production  demonstrate skill in: | | |  |  |  |  |  |  |
| 1 investigation of a problem/situation/opportunity/need, and develop a design brief  for an integrated controlled system including evaluation criteria | | |  |  |  |  |  |  |
| 2 researching, devising, designing and modelling design options | | |  |  |  |  |  |  |
| 3 planning the creation of the system | | |  |  |  |  |  |  |
| The extent to which the production work and accompanying documentation,  including the record of progress and modifications, demonstrate skill in: | | |  |  |  |  |  |  |
| 4 use of tools, equipment and machines to make the system | | |  |  |  |  |  |  |
| 5 realisation of an integrated controlled system | | |  |  |  |  |  |  |
| The extent to which the diagnostic testing, report and performance data demonstrate: | | |  |  |  |  |  |  |
| 6 use of diagnostic test procedures and interpreting test data | | |  |  |  |  |  |  |
| The extent to which the production folio, and teacher observation of student progress  throughout the Systems Engineering Process, demonstrate skill in: | | |  |  |  |  |  |  |
| 7 project management to realise the preferred option | | |  |  |  |  |  |  |
| The extent to which the evaluation report demonstrates skill in: | | |  |  |  |  |  |  |  | | | | | | | | | |
| 8 evaluating the use of the Systems Engineering Process including finished integrated  controlled system. | | |  |  |  |  |  |  |
| If a student does not submit the School-assessed Task  at all, N/A should be entered in the total score box. | | **SUBTOTALS** |  |  |  |  |  |  |  | | | | | | | | | |

**TOTAL SCORE**