

Section 1: Summary of assessment task

Title of assessment task	F1 in Schools CAD/CAM
Year level(s)	Yr. 9

Links to the Draft Australian Curriculum: Technologies

Additional links to other learning areas may also be noted.

Achievement standard/s

They:

- select appropriate data structures and model relationships between entities
- describe the role of hardware and software components
- validate modular algorithms against specifications
- use software tools appropriately and ethically to implement strategies to improve the efficiency of managing design, production and evaluation processes, in creating digital solutions that create new opportunities for enterprises.

Content descriptions

10.4 – Develop systematic techniques for acquiring, storing and validating quantitative and qualitative data from a range of sources.....

10.5 – Use appropriate software to analyse and visual data (including numerical, categorical, text, audiovisual and relational data) to create information and address complex problems.

Content strands and sequences

Please highlight which sequences are addressed in this task

Design and Technologies Knowledge and understanding	Design and Technologies Processes and production skills	Digital Technologies Knowledge and understanding	Digital Technologies Processes and production skills
<p><i>Technologies and society</i></p> <p><i>Technologies context</i></p> <ul style="list-style-type: none"> • Materials and technologies specialisations • Food and fibre production • Engineering principles and systems • Food technologies 	<p><i>Critiquing, exploring and investigating</i></p> <p><i>Generating, developing and evaluating ideas</i></p> <p><i>Planning, producing and evaluating solutions</i></p>	<p><i>Representation of data</i></p> <p><i>Digital systems</i></p> <p><i>Interactions and impact</i></p>	<p><i>Using digital systems</i></p> <p><i>Specification, algorithms and implementation</i></p> <p><i>Creating and interacting online</i></p>

General capabilities and cross-curriculum priorities

Please highlight any of the general capabilities and cross-curriculum priorities that are represented in this task (where appropriate)

General capabilities	Literacy	Numeracy	ICT capability	Critical and creative thinking	Ethical understanding	Personal and social capability	Intercultural understanding
Cross-curriculum priorities	Aboriginal and Torres Strait Islander histories and cultures		Asia and Australia's engagement with Asia		Sustainability		

Background information

Outline the context for the learning, for example:

- A group of 25 Yr. 9 students with mixed learning styles
- Completely new concepts and teaching and learning programmes, with an emphasis on effectively using digital systems.
- Significant teacher input initially, but progressing to a student driven pedagogy. (The student ownership /directed learning is not strictly reflected in this assessment task, but rather in subsequent work the students will move toward later in the course.)
- This is a foundation/scaffolding section of the course.

Task features

Summary of the activity students would be asked to complete and where applicable, the following:

- Completion of a base level 3D modelled F1 prototype vehicle. Followed by a 100 iteration Virtual Wind Tunnel testing regime and subsequent analysis and predictive pre manufacture summary. Basic Numeric Code writing including simple sub programs and simulations will be used to learn G & M language. Students will eventually use a 4th axis milling machine to apply the above learning and to manufacture their final product, which is out side the scope of this assessment task.
- Risk assessment completed
- Students have access to 3D modelling software, CATIA, VWT predictive software, basic CAM software.
- This activity would require a 6wk period of teaching and learning

Task summary

Summary of the task for inclusion in a portfolio of student work.

This 6 week task forms the critical foundation to the semester of work for the students. It is definitely a scaffolding process, and the assessment task will test their ability to learn and apply new digital systems to produce successful outcomes.

Students will learn CAD skills enabling them to digitally produce an image of their initial car design. They conduct a series of quantitative and qualitative tests on the product to predict aerodynamic performance, and record these for subsequent use in the course. They produce a digital orthogonal drawing and a TIFF render of their car. They then write the Numeric Code required for manufacture. Simple editing of the G & M code will be learnt, and applied later in the course.

This is a foundation/scaffolding section of the course.

These activities are recorded within a design Folio featuring a Design Brief, an Investigation including the study of a related technological issue, a Planning section, and finally an Evaluation written against the initial Design Brief.

Section 2: Support materials

Insert the following teacher support material:

- *copy of the assessment task provided to students (including instructions, marking guidelines/rubric/marketing criteria)*
- *additional materials such as adjustments made to the task to cater to diverse students.*