# Pre-approved Learning and Assessment Plan

Stage 1 Industry and Entrepreneurial Solutions (CAD & CAM) (for use from 2022)

Pre-approved learning and assessment plans are for *school use only*.

* Teachers may make changes to the plan, retaining alignment with the subject outline.
* The principal or delegate endorses the use of the plan, and any changes made to it, including use of an addendum.
* The plan does not need to be submitted to the SACE Board for approval.

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| School |  | Teacher(s) |  |

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| SACE school code | | |  | Year |  | Enrolment code | | | | |  | Program variant code (A–W) |
| Stage | Subject code | | | No. of credits (10 or 20) |
|  |  |  |  | **1** | **I** | **E** | **S** | **10** |  |

Addendum – changes made to the pre-approved learning and assessment plan

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| Describe any changes made to the pre-approved learning and assessment plan to support students to be successful in meeting the requirements of the subject. In your description, please explain:  what changes have been made to the plan   * the rationale for making the changes * whether these changes have been made for all students, or for individuals within the student group. |

Endorsement

The use of the learning and assessment plan is approved for use in the school. Any changes made to the plan support student achievement of the performance standards and retain alignment with the subject outline.

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| Signature of principal or delegate |  | Date |  |

Stage 1 Industry and Entrepreneurial Solutions (CAD & CAM) (10-credits)

# Assessment overview

The table below provides details of the planned tasks and shows where students have the opportunity to provide evidence for each of the specific features of all of the assessment design criteria.

Assessment Type 1:Specialised Skills Tasks

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Assessment details | Assessment design criteria | | | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| I | D | P | E |
| **Skills and Application Task 1:**  **Computer Aided Design**  Students demonstrate a range of skills in using a computer aided design (Autodesk Inventor) software package (e.g. create 2D and 3D objects, assemble 3D objects, create annotated drawings, apply material features) through the creation of an IKEA Toy Car and its components.  Students will ‘build’ a chosen combination of toy car components (.ipt) using CAD software that will then be assembled together (.iam). Students will use measuring tools, e.g. Vernier Calipers to measure the physical toy components, record these dimensions and then recreate the components using CAD software. |  |  | 1,2 | 1 | The combined evidence for the specialised skills task should be a maximum of 500 words if written, a maximum of 3 minutes if oral, or the equivalent in multimodal form. |
| **Skills and Application Task 1:**  **Computer Aided Manufacture**  Using the (Autodesk Inventor) computer aided design stress analysis package, students will apply material finishes and complete stress analysis testing (on one component) to assess whether modifications will be required before CAM processing. Students will then investigate a suitable CAM process and produce one (IKEA Car) component.  Students will produce annotated drawings demonstrating the modifications made to the component as a result of stress analysis testing. Students will present in multimodal form using appropriate technical language to explain processes, procedures and techniques used and any solutions to problems encountered. |  |  | 1,2 | 1 | The combined evidence for the specialised skills task should be a maximum of 500 words if written, a maximum of 3 minutes if oral, or the equivalent in multimodal form. |

Assessment Type 2: Design Process and Product

| Assessment details | Assessment design criteria | | | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| --- | --- | --- | --- | --- | --- |
| I | D | P | E |
| Students produce an entrepreneurial product solution to a specific design brief. They produce a product record that has two parts.  **Part 1 – Design Development**  Students show evidence of key design phases.  **Investigation and Analysis**  Students create a design brief.   * Outlining context, constraints and considerations identifying end-users needs, problems or opportunities. * Research and analyse factors to inform design brief reviewing existing products, processes or design features including material options and production techniques. * Research and analyse an ethical, legal, economic or sustainability issue related to their design brief.   Students need to identify criteria to evaluate how well the finished product satisfies the design brief.  **Design Development and Planning**  Students develop at least three design options for the brief and justify the selection. They show a sequence plan or timeline to undertake the product realization to a maximum of one page using a table, Gantt or spreadsheet format. Any product specifications may be included. | 1,2 | 1,2 |  |  | The evidence for the design development should be a maximum of 1250 words if written or 7 1/2 minutes of recorded oral communication, or the equivalent in multimodal form. |
| **Part 2 – Solution Realisation**  Students create and evaluate the solution. The student provides evidence of the solution in the form of images or a video recording and evaluates the completed solution. Students include.   * The final CAD drawings * The final CAM files * The final completed product * Analysis of the final product and solution features (evaluate how well the requirements of the design brief have been met including what worked well, what did not go according to plan, and what was learnt.) * Reflection on the effectiveness of the realization process (this can include possible modifications to improve the outcome, and discuss how the solution is to be used) |  |  | 1,2 | 1 | The evidence for the solution realisation task should be a maximum of 500 words if written or 3 minutes of recorded oral communication, or the equivalent in multimodal form. |

*Three assessments for 10 credits. Please refer to the Stage 1 Design, Technology, and Engineering subject outline.*