# Pre-approved Learning and Assessment Plan

Stage 2 Material Products (context: Metalwork )

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) |
|  |  |  |  | **2** | **M** | **M** | **A/B** | **20** |  |

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 |  |

# Assessment overview

Stage 2 Material Products – 20 credits

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: Skills and Applications Tasks – weighting 20%

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Assessment details | Assessment design criteria | | | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| I | Pl | Pr | E |
| Specialised Skills Application1  Students are given a series of products for which they produce CAD drawings. The products present the students with different challenges to complete a successful drawing. |  |  | 1,2,3 |  | Supervised 100 minutes class time.  Cad drawings presented in pdf. |
| Specialised Skills Application2  Students fabricate a clamping device, inclusive of mechanisms similar to that of a standard Bar Clamp. Skills assessed are basic machining, accurate material preparation of both the fixed and sliding clamping shoes, and a range of other machining tasks. Students will create a summary table or multimodal format that shows investigation of clamping devices, planning required, technical language and ideas and evaluation of success and effectiveness of the product. | 3 | 1,2 | 1,2,3 | 1,2 | Supervised 100 minutes time as available.  Written summary table or multimodal format presentation  Teacher checklist to indicate competency, safety and quality level |
| Material application  Students test a range of possible injecting plastics, primarily for Melt Flow properties. Students investigate and analyse the functional characteristics and properties of two or more materials or components they are considering for use in the creation of their product(s) or system(s). They report on how their research into and testing of the functional characteristics and properties of these materials or components will affect their selection for use in the realisation of their product(s) or system(s). Testing is to include both qualitative and quantitative measures.  Students will be encouraged to graph results and comment on the analytical test results. | 1,3 | 2,3 |  | 2,3 | A written report of maximum length 800 words or 5 minutes as an oral or the equivalent if a multi-media presentation |

Assessment Type 2: Product – weighting 50%

| Assessment details | Assessment design criteria | | | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| --- | --- | --- | --- | --- | --- |
| I | Pl | Pr | E |
| Minor product: soft faced hammer  Students fabricate a soft faced hammer using a given design brief and drawings. They evaluate the finished product against the specifications of a design brief.  During fabrication they maintain a product record that includes evidence of:   * development of skills * selection and use of appropriate components, specialised processes, and production techniques * application of knowledge and understanding to create the product * safe and accurate use of appropriate equipment and processes * modification of the design brief as a result of technical problems that arise * use of materials with appropriate characteristics and properties * ongoing reflection on ideas and procedures. |  | 3 | 1,2,3 | 2 | Unstructured in supervised laboratory. Three weeks of lesson time spread over 6 weeks.  Decisions on performance standards are based on the successful use of the CAD/CAM process taking into account:   * successful geometry alignment * tool selection, canned cycle selection * speeds * feeds and depth of cut selections. |
| Major product : Injection moulding tool  Using the CAD/CAM process, students design and manufacture an Injection Moulding Tool, and then produce at least three successful parts using the Injection Moulding process. Students need to demonstrate understanding of appropriate CAD processes and principles, CAM processes including tool pathing and the generation of code, and the effective setting up and use of an Injection Moulding machine.  They keep a product record that includes evidence of:   * development of skills * selection and use of appropriate components, specialised processes, and production techniques * application of knowledge and understanding to create the product * safe and accurate use of appropriate equipment and processes * modification of the design brief as a result of technical problems that arise * use of materials with appropriate characteristics and properties * ongoing reflection on ideas and procedures. |  | 3 | 1,2,3 | 2,3 | Unstructured in supervised laboratory. Six weeks of lesson time spread over 6 weeks.  Decisions on performance standards are based on the successful use of the CAD/CAM process taking into account:   * successful geometry alignment * tool selection, canned cycle selection * speeds * feeds and depth of cut selections |

Assessment Type 3: Folio – weighting 30%

| Assessment details | Assessment design criteria | | | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) | |
| --- | --- | --- | --- | --- | --- | --- |
| I | Pl | Pr | E |
| External assessment (two assessments for the folio)  *Product design (documentation and analysis)*  *Students create a design brief and analyse their investigation and planning for their major product, based on the skills and activities outlined in the section ‘The Design Process’ section of the Learning Scope and Requirements .* The design brief should include a statement of intent, functional outcomes, aesthetic considerations, and constraints. It can be presented in dot point form.  The investigating part of the design process should include an investigation into the impact on individuals, society, and/or the environment of technological practices related to the type of product that the student is designing. The analysis involved in investigation can be included in the product design documentation or in the product evaluation.  *Product evaluation:*  *Students evaluate their producing skills, using evidence from the major product record in Assessment Type 2, and evaluate their realised major product.* The evaluation should include:   * a critical comparison of the realised product with the requirements of the design brief, and an explanation of and justification for any changes made * a review of criteria, standards, reliability, safety, quality, and cost-effectiveness * reflection on outcomes, with recommendations for possible improvement or redevelopment of designs or procedures * analysis of the impact of the product on individuals, society, and/or the environment (if not part of product design documentation) * evaluative observations about the student’s own skills development.   Evidence of development, with supporting written or oral summaries that explain, analyse, and evaluate the process and product, could take the form of:   * all or sections of the product record * photographic or electronic or digitally generated materials * audiovisual evidence * materials * products * models * sketches, diagrams, or annotations.   Oral summaries may emerge from teacher-led discussion questions. | 1,2,3,4,5 | 1,2,3 |  | 1,2,3,4 | The combined evidence should be a maximum of 2000 words if written, or a maximum of 12 minutes recorded oral documentation, analysis, and evaluation, or the equivalent in multimodal form. |

*Seven or eight assessments.**Please refer to the Stage 2 Design and Technology subject outline.*