**Stage 1 Robotic and Electronic Systems**

**Design, Technology and Engineering**

School Assessment

**Assessment Type 2: Design Process and Solution**

Purpose

In the Design Process and Solution Assessment Type, students produce evidence in two parts - Part 1 Design development and Part 2 Solution realisation.

Students show evidence of key design phases of investigation and analysis, design development, and planning. For investigation and analysis, students need to review design features, and research and discuss issues. Students analyse influences on a product or system including ethical, legal, economic, and/or sustainability issues. They consider the practical implications of these issues on society or on design solutions.

A solution in this subject is an outcome of the design and realisation process in relation to the chosen context. A solution could be fully realised or a model, prototype, system, part, process (i.e. procedures to output a product) or product.

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 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. Students consider possible modifications to improve the outcome, and discuss how the solution is to be used

Description of task

**Part 1- Design development**

Design Folio

Students are required to investigate and design a Combat robot, which they will then produce in “Part 2”.

The folio must include:

Investigation and Analysis –

* A design brief that outlines functional outcomes, aesthetic considerations, constraints and a statement of intent, and identification of criteria to evaluate the success of the solution.
* Research and analysis of existing design concepts/products and their features.
* Research and discuss one ethical, legal, economic or sustainability issue related to the solution.

Design and Planning –

* Communicating design intent that validates a technical drawings solution that best meets the design brief and planning required.
* Costing of project
* Hand drawing
* Engineering Drawings with dimensions

Evaluation –

* Comparison of the realised product with the criteria specified in the design brief
* Reflection on outcomes with recommendations for possible improvement or redevelopment of designs or procedures
* Evaluative observations about the student’s own skill development.

Their work is to be presented as part of a Folio upon completion. (Refer to assessment conditions below)

**Part 2: Solution realisation (Production)**

2a: Solution – Product

The students produce the Combat robot project as designed in their Folio.

2b: Product Record

They produce a Photographic Record that includes evidence of:

* Development of skills
* Selection and use of appropriate processes and techniques
* Modification to the design as a result of technical problems that arise
* Ongoing reflection on ideas and procedures.

The realised solution must be showcased in the video/photographic record (refer to assessment conditions below)

Assessment conditions

**Part 1 Design development**

The evidence for Part 1- Design development should be a maximum of 1250 words if written or a maximum of 7½ minutes if oral, or the equivalent in multimodal form.

**Part 2 Solution realisation**

The evidence for Part 2 - Solution realisation should be a maximum a maximum of 3 minutes if oral, or the equivalent in multimodal form.

For this assessment type, students provide evidence of their learning in relation to the following assessment design criteria:

* Investigating and Analysis (I1 & I2)
* Design Development and Planning (D1 & D2)
* Production ( P1 & P2)
* Evaluation ( E1)

Performance Standards for Stage 1 Design, Technology and Engineering

Teacher comment:

Overall grade

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Investigations and Analysis | | Design Development and Planning | Production | Evaluation |
| A | Comprehensive and insightful analysis of the design features of products, processes, materials, systems and/or production techniques  Purposeful research and critical analysis of ethical, legal, economic and/or sustainability issues | Insightful and comprehensive communication of design concepts using relevant technical language and visual representations  Insightful and thorough planning, development, testing and validation of design concepts and procedures | Highly proficient application of skills, processes, procedures and techniques to create a solution  Comprehensive development of solutions to technical problems that arise during the solution realisation | Comprehensive and insightful evaluation of the solution features and realisation process |
| B | Thoughtful and well-considered analysis of the design features of products, processes, materials, systems and/or production techniques  Detailed research and well-considered discussion of ethical, legal, economic and/or sustainability issues | Thoughtful and well-considered communication of design concepts using relevant technical language and visual representations  Well-considered planning, development, testing and validation of design concepts and procedures | Proficient application of skills, processes, procedures and techniques to create a solution  Thoughtful development of solutions to technical problems that arise during the solution realisation | Well-informed and detailed evaluation of the solution features and realisation process |
| C | Considered analysis of the design features of products, processes, materials, systems and/or production techniques  Research and some analysis of ethical, legal, economic and/or sustainability issues | Clear communication of design concepts using technical language and some visual representations  Competent planning, development, testing and validation of some design concepts and procedures | Competent application of skills, processes, procedures and techniques to create a solution  Development of solutions to technical problems that arise during the solution realisation | Considered evaluation of the solution features and realisation process |
| D | Identification of the design features of products, processes, materials, systems and/or production techniques  Some description of information about ethical, legal, economic and/or sustainability issues | Basic communication of design concepts using some technical language  Some planning and development of design concepts and/or procedures | Basic application of some skills, processes, procedures and techniques to create a solution  Some endeavour to develop solutions to technical problems that arise during the solution realisation | Some description of the solution features and realisation process |
| E | Attempted identification of the design features of products, processes, materials, systems and/or production techniques  Some accessing of information about ethical, legal, economic and/or sustainability issues | Superficial and simplistic communication of design concepts  Limited use of information to plan design concepts | Limited application of emerging skills  Attempted development of a solution to a technical problem | Emerging recognition of the solution features and realisation process |