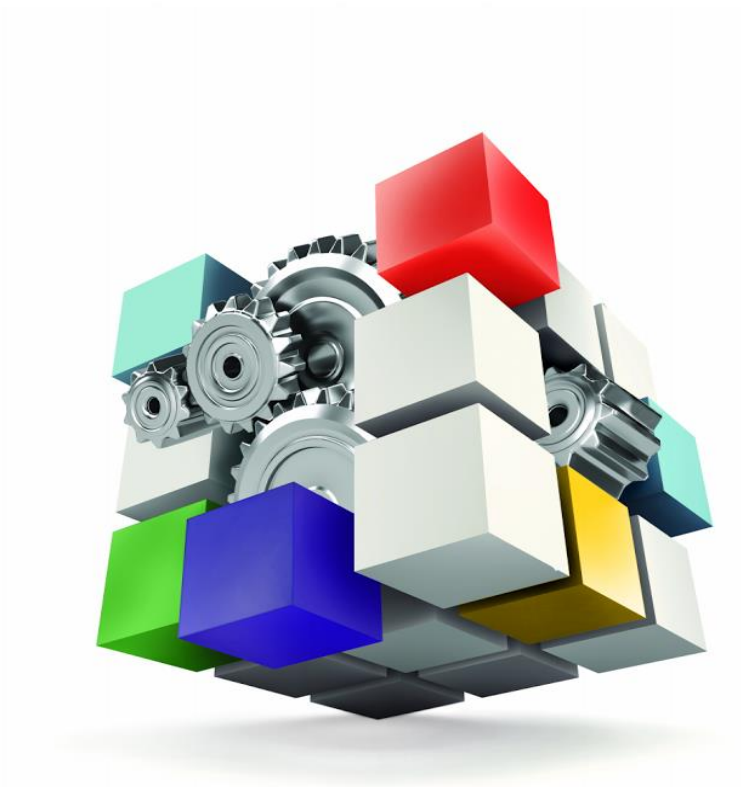
Marking Grid

BTEC Level 3 National in Engineering
Unit 3: Product Design and Manufacture (31708H)



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Unit 3: Engineering Product Design and Manufacture

General marking guidance

- All learners must receive the same treatment. Examiners must mark the first learner in exactly the same way as they mark the last.
- Marking grids should be applied positively. Learners must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the marking grid not according to their perception of where the grade boundaries may lie.
- All marks on the marking grid should be used appropriately.
- All the marks on the marking grid are designed to be awarded. Examiners should always award full marks if deserved. Examiners should also be prepared to award zero marks if the learner's response is not rewardable according to the marking grid.
- Where judgement is required, a marking grid will provide the principles by which marks will be awarded.
- When examiners are in doubt regarding the application of the marking grid to a learner's response, a senior examiner should be consulted.

Specific marking guidance

The marking grids have been designed to assess learner work holistically. Rows within the grids identify the assessment focus/outcome being targeted. When using a marking grid, the 'best fit' approach should be used.

- Examiners should first make a holistic judgement on which band most closely matches the learner response and place it within that band. Learners will be placed in the band that best describes their answer.
- The mark awarded within the band will be decided based on the quality of the answer in response to the assessment focus/outcome and will be modified according to how securely all bullet points are displayed at that band.
- Marks will be awarded towards the top or bottom of that band depending on how they have evidenced each of the descriptor bullet points.

Activity 2: Interpret the brief into operational requirements

Assessment focus	Band 0	Band 1	Band 2	Band 3
Interpreting brief into operational requirements	**0**	**1-2**	**3-4**	**5-6**
	Level of response not worthy of credit	1. Interpret the brief into some key product requirements, opportunities and/or constraints that partially meet the brief and are not cohesively linked. 2. Limited calculation and interpretation of numerical data that may include some errors. 3. Consideration of some health and safety, regulatory and/or sustainability factors with limited relevance to the given context.	1. Interpret the brief into a cohesive set of product requirements, opportunities and constraints that meets the brief. 2. Mostly accurate calculation and interpretation of numerical data that may include minor errors. 3. Consideration of key health and safety, regulatory and sustainability factors with some relevance to the given context.	1. Interpret the brief into a cohesive and comprehensive set of product requirements, feasible opportunities and constraints that meets the brief and considers enhanced product performance. 2. Accurate calculation and interpretation of numerical data. 3. Consideration of key health and safety, regulatory and sustainability factors with relevance to the given context.

Activity 3: Produce a range of initial design ideas based on the client brief

Assessment focus	Band 0	Band 1	Band 2	Band 3
Initial design ideas	**0**	**1-3**	**4-6**	**7-9**
	Level of response not worthy of credit	1. Limited range of basic ideas that address some aspects of the brief. 2. Ideas communicated at a simplistic level with limited technical terms. 3. Ideas that have limited feasibility and may not be fit for purpose.	1. A range of appropriate ideas that address most aspects of the brief. 2. Ideas communicated clearly and suitable use of technical terms that mostly link to the brief. 3. Ideas that are mostly feasible and fit for purpose, but may include some unrealistic design elements.	1. A range of appropriate ideas that comprehensively address the brief. 2. Ideas communicated with clarity and concisely and appropriate use of technical terms that link to the brief. 3. Ideas that are feasible and fit for purpose.

Activity 4: Develop a modified product proposal with relevant design documentation – Subtask Solution

Band 0	Band 1	Band 2	Band 3	Band 4
0	**1-6**	**7-12**	**13-18**	**19-24**
Level of response not worthy of credit	1. The solution shows a simple variation in form and/or approach from the brief. 2. The design proposal shows little or no reference to existing alternative products. 3. Material/s selection is inappropriate compared to the requirements of the brief. Limited investigation of options. 4. Selection of manufacturing process/es is inappropriate compared to the requirements of the brief. Limited investigation of options. 5. Design proposal shows a limited consideration of sustainability at some stages of the product life cycle. 6. Ideas have little reference to the safety of the design and/or designing out risk.	1. The solution is feasible but doesn't represent an improvement from the original product and shows variation in form and/or approach from the brief. 2. The design proposal shows some reference to existing alternative products. 3. Material/s selection is appropriate to the brief and partially justified by an investigation that considers limited options. 4. Selection of manufacturing process/es is appropriate to the brief and partially justified by an investigation that considers limited options. 5. Design proposal shows some consideration of sustainability at some stages of the product life cycle. 6. Ideas show limited reference to the safety of the design and designing out risk	1. The solution is an improvement from the original product, showing a clear variation in form and/or approach from the brief. 2. The design proposal is informed, based on some understanding of existing alternative products. 3. Material/s selection is appropriate to the brief and mostly justified by an investigation of options. 4. Selection of manufacturing process/es is appropriate to the brief and mostly justified by an investigation of options. 5. Design proposal shows some consideration of sustainability at most stages of the product life cycle. 6. Ideas show some references to the safety of the design and designing out risk.	1. The solution is optimised, demonstrating a justified variation in form and/or approach from the brief. 2. The design proposal is informed, based on a thorough understanding of existing alternative products. 3. Material/s selection is appropriate to the brief and fully justified by balanced investigation of options. 4. Selection of manufacturing process/es is appropriate to the brief and fully justified by balanced investigation of options. 5. Design proposal considers sustainability at all stages of the product life cycle. 6. Ideas clearly reference the safety of the design and designing out risk.

Activity 5: Evaluate the design proposal

Assessment focus	Band 0	Band 1	Band 2	Band 3
Validating the design proposal	**0**	**1-3**	**4-6**	**7-9**
	Level of response not worthy of credit	1. Superficial appraisal of: • Success and limitations of completed solutions • Indirect benefits and opportunities. • Constraints. 2. Provides a limited rationale for the design solution, which may not relate directly to the brief. 3. Little or no further technology-led modifications communicated.	1. Some appraisal, which may be unbalanced or incomplete, of: • Success and limitations of completed solutions • Indirect benefits and opportunities. • Constraints. 2. Provides a partial rationale for why the design solution is more effective in relation to some aspects of the brief. 3. Further technology-led modifications are communicated with some evidence of how they could improve the effectiveness of the solution.	1. Balanced and thorough appraisal of: • Success and limitations of completed solutions • Indirect benefits and opportunities. • Constraints. 2. Provides a sound rationale for why the design solution is more effective in relation to the brief. 3. Further technology-led modifications are communicated with detailed evidence of how they could optimise the solution.

Activity 1: Planning and design changes made during the development process

Assessment focus	Band 0	Band 1	Band 2	Band 3
Carry out an iterative development process	**0**	**1-2**	**3-4**	**5-6**
	Level of response not worthy of credit	1. Entries demonstrate an unstructured or linear approach to the design process. 2. Development activities lead to design refinements that may not be relevant to the brief. 3. A limited justification of the changes made in order to fulfil the requirements of the brief. 4. Action points are vague, incomplete or not present.	1. Entries demonstrate some evidence of an iterative approach to the design process. 2. Development activities lead to design refinements that are partially linked to the requirements of the brief. 3. Some justification of the changes made throughout the development process to fulfil the requirements of the brief. 4. Action points for the next external assessment session are identified but not well defined or prioritised.	1. Entries demonstrate a logical and iterative approach to the design process. 2. Development activities lead to design refinements that are coherently linked to research and the requirements of the brief. 3. Thorough justification of changes made throughout the development process to fulfil the requirements of the brief. 4. Well defined, logical and prioritised action points for the next external assessment session are identified.