

Component 2: Assessment Criteria

Teachers must mark students' work using the following assessment criteria. Please refer to the 'General Marking Guidance' provided in the CAB for further information on how to apply these grids accurately.

Part 1: Identifying and outlining possibilities for design

Please refer to the information provided on page 22 of the specification relating to the skills and evidence outlined for this grid.

Grid 1

Level	Mark	Identification and investigation of a design possibility (AO1 1a 9 marks)
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none">• Evidence of basic investigation of superficially relevant design possibilities.• Basic identification and justification of a design possibility.• Basic investigation of the needs, wants and values of the client/end user to inform design requirements.
Level 2	4–6	<ul style="list-style-type: none">• Evidence of sound investigation of relevant design possibilities.• Competent identification and justification of a design possibility.• Sound investigation of the needs, wants and values of the client/end user to inform design requirements.
Level 3	7–9	<ul style="list-style-type: none">• Evidence of in-depth investigation of pertinent design possibilities.• Effective identification and justification of a design possibility.• Comprehensive investigation of the needs, wants and values of the client/end user to inform design requirements.

Please refer to the information provided on page 23 of the specification relating to the skills and evidence outlined for this grid.

Grid 2

Level	Mark	Investigation of needs and research (AO1 1a 15 marks)
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none"> • Superficial assessment of the needs, wants and values of the end user. • Superficial assessment of the needs of the prototype with limited consideration of form, and function. • Limited links between the design needs and the research undertaken. • Basic selection of research sources, including existing products, ergonomic information and standards, which provide limited insight to the design context, showing a partial understanding of the design possibility and related design problems.
Level 2	4–7	<ul style="list-style-type: none"> • Partially developed assessment of the needs, wants and values of the end user. • Partially developed assessment of the needs of the prototype with generally relevant consideration of form, function and sustainability. • Partially sound links between the design needs and the research undertaken. • Partially sound selection of research sources, including existing products, ergonomic information and standards, which provide a partially sound insight to the design context, showing a consistent understanding of the design possibility and related design problems.
Level 3	8–11	<ul style="list-style-type: none"> • Mostly developed assessment of the needs, wants and values of the user. • Mostly developed assessment of the needs of the prototype with relevant consideration of form, function, sustainability and level of production. • Sound links between the design needs and the research undertaken. • Sound selection of research sources, including existing products, ergonomic information and standards, which provide a sound insight to the design context, showing a considered understanding of the design possibility and related design problems.
Level 4	12–15	<ul style="list-style-type: none"> • Comprehensively developed assessment of the needs, wants and values of the user. • Comprehensively developed assessment of the needs of the prototype with pertinent consideration of form, function, sustainability and level of production. • Perceptive links between the design needs and the research undertaken. • Perceptive selection of research sources, including existing products, ergonomic information and standards, which provide perceptive insight to the design context, showing a comprehensive understanding of the design possibility and related design problems.

Please refer to the information provided on page 24 of the specification relating to the skills and evidence outlined for this grid.

Grid 3

Level	Mark	Specification (AO1 1b 9 marks)
	0	No rewardable material.
Level 1	1–3	<ul style="list-style-type: none"> • Basic design brief that reflects some of the investigated needs, wants and values of the client/end user. • Superficial range of specification points which are realistic, technical and measurable in relation to a basic design problem. • Limited justification of the performance requirements for the prototype.
Level 2	4–6	<ul style="list-style-type: none"> • Considered design brief that reflects most of the investigated needs, wants and values of the client/end user. • Developed range of specification points which are realistic, technical and measurable in relation to an effective design problem. • Sound justification of the performance requirements for the prototype.
Level 3	7–9	<ul style="list-style-type: none"> • Comprehensive design brief that fully reflects the investigated needs, wants and values of the client/end user. • Comprehensive range of specification points which are realistic, technical and measurable in relation to a sophisticated design problem • Perceptive justification of the performance requirements for the prototype.

Part 2: Designing a prototype

Please refer to the information provided on page 25 of the specification relating to the skills and evidence outlined for this grid.

Grid 4

Level	Mark	Design ideas (AO2 9 marks)
	0	No rewardable material
Level 1	1–3	<ul style="list-style-type: none"> • Basic selection and use of design strategies to inform decisions. • Present ideas that show a limited consideration for the user needs and specification parameters. • Basic use of aesthetic features with basic consideration of historical and cultural influences showing a limited understanding of the intended use of the prototype. • Ideas demonstrate a basic understanding of relevant materials and processes.
Level 2	4–6	<ul style="list-style-type: none"> • Considered selection and use of design strategies to inform decisions. • Present ideas that show sound consideration for the user needs and specification parameters. • Effective use of aesthetic features with sound consideration of historical and cultural influences showing a sound understanding of the intended use of the prototype. • Ideas demonstrate a sound understanding of relevant materials, processes and techniques.
Level 3	7–9	<ul style="list-style-type: none"> • Sophisticated selection and use of design strategies to inform decisions. • Present ideas that show an in-depth consideration for the user needs and specification parameters. • Accomplished use of aesthetic features with perceptive consideration of historical and cultural influences showing an in-depth understanding of the intended use of the prototype. • Ideas demonstrate an in-depth understanding of relevant materials, processes and techniques.

Please refer to the information provided on page 26 of the specification relating to the skills and evidence outlined for this grid.

Grid 5

Level	Mark	Development of design ideas (AO2 9 marks)
	0	No rewardable material
Level 1	1–3	<ul style="list-style-type: none"> • Superficial use of research to inform ongoing developmental changes. • Basic use of an iterative approach to the development of a design solution, including superficial input of client/end user feedback to inform decisions throughout the process. • Changes and alternatives to designs are informed by the basic application of technical knowledge of materials and processes. • Limited application of modelling/simulation techniques to inform decisions showing a basic understanding of the need for testing in the development of a final prototype.
Level 2	4–6	<ul style="list-style-type: none"> • Considered use of research to inform ongoing developmental changes. • Sound use of an iterative approach to the development of a design solution, including considered input of client/end user feedback to inform decisions throughout the process. • Changes and alternatives to designs are informed by the sound application of technical knowledge of materials and processes. • Effective application of modelling/simulation techniques to inform decisions showing a sound understanding of the need for testing in the development of a final prototype.
Level 4	7–9	<ul style="list-style-type: none"> • Perceptive use of research to inform ongoing developmental changes. • Accomplished use of an iterative approach to the development of a design solution, including perceptive input of client/end user feedback to inform decisions throughout the process. • Changes and alternatives to designs are informed by the in-depth application of technical knowledge of materials and processes. • Sophisticated application of modelling/simulation techniques to inform decisions showing an in-depth understanding of the need for testing in the development of a final prototype.

Please refer to the information provided on page 27 of the specification relating to the skills and evidence outlined for this grid.

Grid 6

Level	Mark	Final design solution (AO1 3 marks, AO2 6 marks)
	0	No rewardable material
Level 1	1–3	<ul style="list-style-type: none"> • The manufacturing specification generally addresses the needs and wants of the client/end user and includes basic technical details to allow partially accurate interpretation by a third party. • Basic refinement of design proposals to generate a design solution that generally meets the requirements of the design specification. • Basic project management including application of calculations to determine material quantities and costs related to the production of the prototype, showing a basic understanding of methods which can be applied to reduce wastage.
Level 2	4–6	<ul style="list-style-type: none"> • A manufacturing specification that effectively addresses the needs and wants of the client/end user is presented that includes effective technical details to allow mostly accurate interpretations by a third party. • Effective refinement of design proposals to generate a design solution that effectively meets the requirements of the design specification. • Effective project management including application of calculations to determine material quantities and costs related to the production of the prototype, showing an effective understanding of methods which can be applied to reduce wastage.
Level 3	7–9	<ul style="list-style-type: none"> • A manufacturing specification that comprehensively addresses the needs and wants of the client/end user is presented that includes comprehensive technical details to allow fully accurate interpretation by a third party. • Sophisticated refinement of design proposals to generate a design solution that comprehensively meets the requirements of the design specification. • Accomplished project management including application of calculations to determine material quantities and costs related to the production of the prototype, showing a thorough understanding of methods which can be applied to reduce wastage.

Please refer to the information provided on page 27 of the specification relating to the skills and evidence outlined for this grid.

Grid 7

Level	Mark	Review of development and final idea (AO3 1a 6 marks, AO3 1b 6 marks)
	0	No rewardable material
Level 1	1–3	<ul style="list-style-type: none"> • Superficial analysis of the refinements made to designs through the development process with limited references to feedback made by others and consideration of materials, components and manufacturing techniques. • Limited and imbalanced evaluation of the refinements made to designs through the development process, which draw limited conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Superficial analysis of the designs and prototypes made by others, which considers a limited range of factors and makes superficial connections between elements of the design. • Limited and imbalanced evaluation of the design and prototypes made by others, which begins to inform their own design decisions.
Level 2	4–6	<ul style="list-style-type: none"> • Partially developed analysis of the refinements made to designs through the development process, supported by generally relevant references to feedback made by others and consideration of materials, components and manufacturing techniques. • Partially sound and partially balanced evaluation of the refinements made to designs through the development process, which is used to draw partially sound conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Partially developed analysis of the designs and prototypes made by others, which considers a generally relevant range of factors and makes partially developed connections between elements of the design. • Partially sound and partially balanced evaluation of the designs and prototypes made by others, which coherently informs their own design decisions.
Level 3	7–9	<ul style="list-style-type: none"> • Mostly developed analysis of the refinements made to designs throughout the development process, mostly relevant references to feedback made by others and consideration of materials, components and manufacturing techniques. • Sound and mostly balanced evaluation of the refinements made to designs through the development process, which is used to draw sound conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Mostly developed analysis of the designs and prototypes made by others, which considers a mostly relevant range of factors and makes mostly relevant connections between elements of the design. • Sound and mostly balanced evaluation of the designs and prototypes made by others, which effectively informs their own design decisions.

Level	Mark	Review of development and final idea (<i>continued</i>) (AO3 1a 6 marks, AO3 1b 6 marks)
Level 4	10-12	<ul style="list-style-type: none"> • Comprehensively developed analysis of the refinements made to designs through the development process, pertinently supported by references to feedback made by others and consideration of materials, components and manufacturing techniques. • Perceptive and balanced evaluation of the refinements made to designs through the development process, which is used to draw perceptive conclusions about the appropriateness of the final prototype in meeting the needs of the specification. • Comprehensively developed analysis of the designs and prototypes made by others, which considers a comprehensive range of factors and makes comprehensive connections between elements of the design. • Perceptive and balanced evaluation of the designs and prototypes made by others, which is used perceptively to inform their own design decisions.

Please refer to the information provided on page 28 of the specification relating to the skills and evidence outlined for this grid.

Grid 8

Level	Mark	Communication of design ideas (AO2 6 marks)
	0	No rewardable material
Level 1	1–2	<ul style="list-style-type: none"> • Basic selection and appropriate use of traditional/manual graphical techniques to communicate design proposals. • Basic selection and appropriate use of computer-aided design (CAD) techniques to communicate design proposals. • Basic selection and appropriate use of written techniques to communicate design proposals.
Level 2	3–4	<ul style="list-style-type: none"> • Considered selection and effective use of traditional/manual graphical techniques to communicate design proposals. • Considered selection and effective use of computer-aided design (CAD) techniques to communicate design proposals. • Considered selection and effective use of written techniques to communicate design proposals.
Level 3	5–6	<ul style="list-style-type: none"> • Perceptive selection and accomplished use of traditional/manual graphical techniques to communicate design proposals. • Perceptive selection and accomplished use of computer-aided design (CAD) techniques to communicate design proposals. • Perceptive selection and accomplished use of written techniques to communicate design proposals.

Part 3: Making a final prototype

Please refer to the information provided on pages 29-30 of the specification relating to the skills and evidence outlined for this grid.

Grid 9

Level	Mark	Tools and equipment (AO2 12 marks)
	0	No rewardable material
Level 1	1–3	<ul style="list-style-type: none"> • Basic selection of materials, fixtures, components and fittings some of which are appropriate for the final prototype, showing a limited understanding of the intended purpose of the prototype. • Limited use of tools and equipment to prepare materials for the manufacture of the prototype, showing a limited understanding of the need for dimensional accuracy. • Demonstrate a generally adequate degree of safe working practice for self and others.
Level 2	4–6	<ul style="list-style-type: none"> • Adequate selection of materials, fixtures, components and fittings which are generally appropriate for the final prototype, showing a partially sound understanding of the requirements of the end user and the intended purpose of the prototype. • Some skilful use of tools, equipment and techniques to prepare materials for the manufacture of the prototype, showing a generally sound understanding of the need for dimensional or geometric accuracy. • Demonstrate a fully adequate degree of safe working practice for self and others.
Level 3	7–9	<ul style="list-style-type: none"> • Mostly sophisticated selection of materials, fixtures, components and fittings which are mostly appropriate for the final prototype, showing a sound understanding of the requirements of the end user and the intended purpose of the prototype. • Mostly Skilful use of tools, equipment and techniques to prepare materials for the manufacture of the prototype, showing a sound understanding of the need for dimensional or geometric accuracy. • Demonstrate a generally high degree of safe working practice for self and others.
Level 4	10–12	<ul style="list-style-type: none"> • Sophisticated selection of materials, fixtures, components and fittings which are fully appropriate for the final prototype, showing an in-depth understanding of material properties, the requirements of the end user, and the intended purpose of the prototype. • Accomplished use of tools, equipment and techniques to prepare materials for the manufacture of the prototype, showing an in-depth understanding of the need for dimensional and geometric accuracy. • Demonstrate a consistently high degree of safe working practice for self and others.

Please refer to the information provided on pages 29-30 of the specification relating to the skills and evidence outlined for this grid.

Grid 10

Level	Mark	Quality and accuracy (AO2 18 marks)
	0	No rewardable material
Level 1	1–4	<ul style="list-style-type: none"> • Produce a prototype that demonstrates mostly adequate making skills in relation to a basic design problem. • Produce a partly functioning prototype which matches the end user needs. • Produce a prototype that superficially meets the design specification. • Basic application of an iterative approach to manufacture and to produce a prototype.
Level 2	5–9	<ul style="list-style-type: none"> • Produce a prototype that demonstrates some skilful making skills at an advanced level in relation to a partially effective design problem • Produce a generally functioning prototype which matches the end user needs. • Produce a prototype that partially meets the design specification. • Considered application of an iterative approach to manufacture to produce a prototype.
Level 3	10–14	<ul style="list-style-type: none"> • Produce a prototype that demonstrates skilful making skills at an advanced level in relation to an effective design problem. • Produce a mostly functional prototype which matches the end user needs. • Produce a prototype that mostly meets the design specification. • Accomplished application of an iterative approach to manufacture to produce a prototype.
Level 4	15–18	<ul style="list-style-type: none"> • Produce a prototype that demonstrates accomplished making skills at an advanced level in relation to a sophisticated design problem • Produce a fully functional prototype which matches the end user needs. • Produce a prototype that fully meets the design specification. • Sophisticated application of an iterative approach to manufacture to produce a prototype.

Part 4: Evaluating own design and prototype

Please refer to the information provided on page 31 of the specification relating to the skills and evidence outlined for this grid.

Grid 11

Level	Mark	Testing and evaluation (AO3 1a 3 marks, AO3 1b 3 marks, AO3 2a 3 marks, AO3 2b 3 marks)
	0	No rewardable material
Level 1	1–4	<ul style="list-style-type: none"> • Superficial analysis of the final prototype, taking into account refinements implemented during the development and manufacturing process and the client/end user specification, showing a limited approach to testing against measurable criteria. • Limited evaluation of the prototype, taking into account the iterative design process and the intended purpose of the prototype, drawing imbalanced conclusions from testing. • Superficial analysis of the social, moral, ethical and environmental impact of materials and manufacturing processes of the prototype • Limited evaluation of the social, moral, ethical and environmental impact of the prototype.
Level 2	5–8	<ul style="list-style-type: none"> • Developed analysis of the prototype, taking into account refinements implemented during the development and the client/end user specification, showing a sound approach to testing against measurable criteria. • Sound evaluation of the prototype, taking into account the iterative design process and the intended purpose of the prototype, drawing mostly balanced conclusions from testing against measurable criteria. • Developed analysis of the social, moral, ethical and environmental impact of materials and manufacturing processes of the prototype • Sound evaluation of the social, moral, ethical and environmental impact of the prototype.
Level 3	9–12	<ul style="list-style-type: none"> • Comprehensively developed analysis of the prototype, taking into account refinements implemented during the development and the client/end user specification, showing a perceptive approach to testing against most measurable criteria. • Perceptive evaluation of the prototype, taking into account the iterative design process and the intended purpose of the prototype, drawing balanced conclusions from testing against measurable criteria. • Comprehensively developed analysis of the social, moral, ethical and environmental impact of materials and manufacturing processes of the prototype • Perceptive evaluation of the social, moral, ethical and environmental impact of the prototype.