

	DESIGN	MAKE	EVALUATE	TECHNICAL KNOWLEDGE
MASTER	Exceptional research to identify and understand user needs to inform multiple developed designs. Exceptional ability to identify, solve and create their own design problems and understand how to reformulate problems given to them. Exceptional detailed specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations and contexts. Exceptional variety of approaches to generate creative, innovative ideas and avoid stereotypical responses, using an imaginative use of different technical drawing techniques, CAD and modelling.	Exceptional ability to select from and use specialist tools, techniques, processes, equipment and machinery with precision and care, including computer-aided manufacture accurately and safely. Exceptional ability to combine a complex range of materials, components and ingredients, with careful consideration of their properties. Exceptional ability to complete all products to a professional standard.	Exceptional on-going analysis, testing, evaluation and refinement against their specification, fully considering and engaging stakeholders results in excellent progression of future iterations and final prototype/s. Exceptional thorough reporting on further modifications required to improve performance, including in relation to life cycle analysis, consumption, positive and negative impacts on the wider world, new and emerging technologies and the concept of 'cradle to grave' and the circular economy.	Exceptional independent concise understanding of smart, modern, and reactive materials & components. Exceptional independent use of electronics to embed intelligence in products that respond to inputs and control outputs using programmable components. Exceptional independent experimentation when investigating new and emerging technologies. Exceptional knowledge of source seasonality and characteristics of a broad range of ingredients. Exceptional ability to explain in great detail the application of nutrition and health.
EXPERT	Highly developed research to identify and understand user needs to inform multiple designs. Highly developed ability to identify and solve their own design problems and understand how to reformulate problems given to them. Highly developed specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations and contexts. Highly developed variety of approaches to generate creative, innovative ideas and avoid stereotypical responses. Uses imaginative different drawing techniques and CAD and modelling.	Skillfully able to select from and use specialist tools, techniques, processes, equipment and machinery, including computer-aided manufacture accurately and safely. Skillfully able to select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties. Skillfully completed all products to an excellent standard.	Skillfully able to test, evaluate and refine their ideas and products against their specification, considering intended users and other interested groups, ensuring progression to future iterations and final prototype/s. Skillfully able to develop further modifications required to improve performance, including in relation to life cycle analysis, positive and negative impacts, new and emerging technologies and the concept of 'cradle to grave'.	Highly developed understanding of smart, modern, and reactive materials & components. Highly developed use of electronics to embed intelligence in products that respond to inputs and control outputs using programmable components. Highly developed knowledge of source seasonality and characteristics of a broad range of ingredients including nutrition and health.
PROFICIENT	Consistent ability to use research to identify and understand user needs. Consistent ability to identify, solve and understand how to change designs when faced with problems. Consistent ability to develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations and contexts. Consistently uses a variety of approaches to generate creative ideas and avoid stereotypical responses. Consistent ability to develop and communicate design ideas using annotation, sketches and a wide range of media and modelling.	Consistently able to select from and use a wide range of tools, techniques, processes, equipment and machinery including computer-aided manufacture. Consistently able to select from and use a wider range of materials, components and ingredients. Consistently completed all products to a good standard.	Consistent ability to analyse the work of past and present professionals and others to develop and broaden their understanding. Consistent ability to investigate new and emerging technologies. Consistent ability to test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups. Consistent ability to understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists.	Consistent ability to understand and use the properties of materials and the performance of structural elements to achieve functioning solutions. Consistent ability to understand how more advanced mechanical systems used in their products enable changes in movement and force. Consistent ability to understand how more advanced electrical and electronic systems can be powered and used in their products. Consistent ability to apply computing and use electronics to embed intelligence in products. Consistent ability to apply and understand source seasonality, characteristics of ingredients, nutrition and health in detail.
COMPETENT	Generally Consistent ability to use research to identify user needs. Generally consistent ability to identify and solve their own design problems and understand how to develop them. Generally consistent ability to develop specifications to inform the design of innovative products that respond to needs in a situation or context. Generally consistent use of a variety of approaches to generate creative ideas and avoid stereotypical responses. Generally consistent ability to develop and communicate design ideas using a broadening use of media and modelling.	Sufficiently able to select from and use a range of specialist tools, techniques, processes, equipment and machinery including computer-aided manufacture. Sufficiently able to select from and use a range of materials, components and ingredients, taking into account their properties.	Generally Consistent ability to analyse the work of past and present professionals and others to develop and broaden their understanding. Generally Consistent ability to investigate new and emerging technologies. Generally Consistent ability to test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups.	Generally Consistent ability to understand and use the properties of materials and the performance of structural elements to achieve functioning solutions. Generally Consistent ability to understand how more advanced mechanical systems used in their products enable changes in movement and force. Generally Consistent ability to understand how more advanced electrical and electronic systems can be powered and used in their products [for example, circuits with heat, light, sound and movement as inputs and outputs]. Generally Consistent ability to apply computing and use electronics to embed intelligence in products that respond to inputs. Generally Consistent ability to apply and understand source seasonality, characteristics of ingredients, nutrition and health in some detail.
SECURE	Moderate ability to understand user needs. Moderate ability to identify and solve their own design problems. Moderate ability to develop specifications to inform the design of products. Often uses a variety of approaches to generate ideas. Moderate ability to develop and communicate design ideas using annotation, sketches and modelling.	Moderate ability to select from and use most tools, techniques, processes, equipment and machinery including computer-aided manufacture. Moderate ability to select from and use most materials, components and ingredients, taking into account their properties. Most products are complete to a satisfactory level.	Moderate ability to analyse the work of past and present professionals. Moderate ability to investigate new and emerging technologies. Moderate ability to refine their ideas and products against a specification. Moderate ability to discuss and show understanding on developments in design and technology.	Moderate ability to understand and use the properties of materials and the performance of structural elements. Moderate ability to understand how more advanced mechanical systems used in their products enable changes in movement. Moderate ability to understand how electrical and electronic systems can be powered and used in their products. Moderate ability to apply computing and use electronics to embed intelligence in products that respond to inputs. Moderate ability to apply knowledge of source seasonality, characteristics of ingredients, nutrition and health.
DEVELOPING	Some ability to use research and develop design criteria. Some ability to design innovative, functional and appealing products that are fit for purpose and aimed at particular individuals or groups. Some ability to generate, model and communicate their ideas.	Some ability to select from and use some tools and equipment to perform practical tasks. Some ability to select from and use some materials and components. Some completed products.	Some ability to investigate and analyse a range of existing products. Some capability to evaluate their ideas and products against their own design criteria. Some consideration of the views of others to improve their work. Some understanding of how key events and individuals in design and technology have helped shape the world.	Some understanding of how to strengthen, stiffen and reinforce more complex structures. Some understanding and use of mechanical systems in their products. Some understand and use of electrical systems in their products. Some understanding of computing to program, monitor and control their products. Some understanding of source seasonality, characteristics of ingredients, nutrition and health.
EMERGING	Limited ability to record annotation. Limited use of design criteria. Limited ability to generate and develop ideas.	Limited ability using some of the tools. Limited ability to collect listed equipment at the beginning of the lesson. Limited ability to select appropriate tools and equipment. Mostly incomplete products.	Limited ability to explore and evaluate existing products. Limited ability to evaluate their ideas and products against design criteria.	Limited ability to build structures, exploring how they can be made stronger, stiffer and more stable. Limited understanding and use of mechanisms in their products. Limited knowledge of source seasonality, characteristics of ingredients, nutrition and health.