Design and Technology Key stage 3 Assessment
Product Design

KING EDWARD VI HIGH SCHOOL

Year 7

Secure

Knowledge

Materials

- Understand different types of timbers and applied uses with examples.
- Understand different types of metal and applied uses with examples.
- Understand different types of plastics and SMART materials and applied uses with examples

Tools and equipment

- Know a range of hand and bench tools with risks and precautions.

Designing

Investigating

- Understanding user centred design
- Detailed product analysis of existing products using ACCESS FM.
- Describe all design features when doing product analysis of existing products.

Communication

- Produce a range of appropriate design ideas for a user
- Draw 2d and complex oblique shapes.
- Label materials and justify material selection against properties.
- To be able to add accurate dimensions to drawings.
- Apply colour with tone and shade and render basic texture.
- Use 2D design to draw 2D shapes and 3D oblique shapes to scale and add typography.
- Apply thick and thin line weight rule.

Making

- Mark out in mm accurately to 1mm.
- Cut and shape complex timber based materials
- Drill timber and counter sink holes.
- **Smooth and finish timber to a high standard.**

Evaluation

- Write about the good and bad points of a final idea and how it could be improved.

Mastered

Knowledge

Materials

- Understand different types of timbers and applied uses with examples and understand different properties of materials.
- Understand different types of metal uses and applied uses with examples and understand different properties of materials.
- Understand different types of plastics and SMART materials and applied uses with examples and understand different properties of materials.
- To be able to justify selection of materials with reasons related to properties and suggest alternatives.

Tools and equipment

- Know the range of hand and bench tools with detailed risks and precautions. Understand British safety standards,
- Independently select the correct tool for specific practical tasks.

Designing

Investigating

- Understanding user centred design
- Detailed product analysis of existing products using ACCESS FM. Explain how your ideas could inform your own ideas.
- Describe all design features when doing product analysis of existing products. Test Products and record findings

Communication

- Produce a wide range of appropriate design ideas for a user
- Draw in isometric.
- To be able to add accurate dimensions to drawings. Include diameter and radius dimensions.
- Label materials and justify material selection against properties, suggest alternative materials.
- Apply colour with tone and shade and render a range textures.
- Use 2D design to draw 2D shapes and 3D oblique and isometric shapes to scale and add typography.
- Apply thick and thin line weight rule. Include hidden line detail.

Making

- Mark out in mm accurately to 0.5mm.
- Cut and shape complex timber-based materials
- Drill timber and counter sink holes.
- Smooth and finish timber to a high standard on edges and faces.
- Be able to chamfer and radius edges.

Design and Technology Key stage 3 Assessment
Product Design

KING EDWARD VI HIGH SCHOOL

Year 8

Secure

Knowledge

Joining and Finishing materials

- Understand different wood joints **to be to give reasons why a particular joint would be used.**
- Understand different ways of joining **metal to be to give reasons why a particular metal would be used.**
- Understand what a former is when shaping metal and plastics.

Manufacturing Processes.

- Understand the different manufacturing processes **and give examples.**
- Understand a **wide range** of CAD/CAM
- Understand industrial processes when working with wood, metal and plastics. **To be able to name types of production methods used.**

Designing

Investigating

- Understand ergonomics and anthropometrics when designing.
- Understand what is meant by brand identity **and give examples.**
- Write a detailed list of features for a design
- Gather secondary product analysis of existing products to inform design ideas.

Communication

- Produce several design ideas based on a client
- Draw **complex** design ideas in oblique and Isometric
- Be able to do a 3rd Angle working drawing **with dimensions**.
- Use 2D design to **complex** designs to output to the laser cutter.

Making

- Mark out in mm in wood, metal and plastic to 0.5mm accuracy.
- To be able to join wood using a **two different joints**.
- To be able to join metal using brazing **and riveting.**
- To be able to export files to use on the laser cutter **and operate the laser cutter independently**.

Mastered

Knowledge

Joining and Finishing materials

Understand different wood joints and be able to give reasons why a particular joint would be used. **To be able to suggest alternative joining methods.**

Understand different ways of joining metal and be able to give reasons why a particular metal would be used**. To be able to suggest alternative joining methods.**

Understand what a former is when shaping metal and plastics. **Understand what a template is.**

Manufacturing Processes.

Understand the different manufacturing processes and give examples **explain which is the most appropriate method and why.**

Understand a wide range of CAD/CAM. **To be able to select the best method of CAD/CAM for specific tasks**.

Understand industrial processes when working with wood, metal and plastics. To be able to name types of production methods used. **Be able to explain advantages and disadvantages of production methods.**

Designing

Investigating

Understand ergonomics and anthropometrics when designing. **To be able to explain how they can improve a design.**

Understand what is meant by brand identity and give examples. **Create designs consistent with a brand style**.

Write a detailed specification with manufacturing details

Gather secondary product analysis of existing products to inform design ideas. **Gather primary research product analysis and record.**

Communication

Produce **wide range** of design ideas based on a client.

Draw design complex ideas in oblique and Isometric **with multiple parts.**

Be able to do a 3rd Angle working drawing **with dimensions and hidden detail.**

Use 2D design to draw complex designs to output to the laser cutter. **With push in parts**.

Making

Mark out in mm in wood, metal and plastic to 0.5mm accuracy.

To be able to join wood using a **three different joints**.

To be able to join metal using brazing **and different types riveting.**

Design and Technology Key stage 3 Assessment
Product Design

KING EDWARD VI HIGH SCHOOL

Year 9

Secure

Knowledge

Social and moral.

- Understand what **inclusive and exclusive design.**
- Understand how cultural differences and **lifestyle can affect design.**
- Understand ethics when manufacturing. **Be able to give examples of good and poor ethics in manufacturing.**
- Understand planned obsolescence. **Give examples of products.**

Design past and present.

- Know a **range of British and International design movements.**
- Know some famous British designers and **be able to name and describe products they have designed.**

Environmental.

- Know the 6RS **and give examples.**
- Understand environmental issues related to manufacturing **and give examples**.
- Understand about sustainability, biodegradable materials **and landfill and give examples.**

Designing

Investigating

- Use research to inform your designs ideas **explain how your research influenced your design ideas.**

Communication

- Produce a wide range of design ideas based a design movement.
- To be able to do exploded drawings. Showing hidden detail.
- Use 2D design to draw designs to output to the laser cutter. With engrave and cut lines. **To be able to create tolerance fit joints working to a 0.15 mm tolerance.**

Making

- Mark out to 0.5 mm accuracy in all resistant and compliant materials.
- To be able to use a wide range of hand and machine tools
- To be able to join different materials and parts using a range of **permanent and non-permanent joining techniques.**
- To be able to export files to use on CAD/CAM **and operate independently.**
- To be able to assemble multiple components **accurately.**
- To finish materials in different ways to a good standard.
- To plan production using flowcharts and **include quality checks.**

Evaluation

- Test and evaluate your final product

Mastered

Knowledge

Social and moral.

- Understand what inclusive and exclusive design**. Give examples of good and bad inclusive/exclusive design.**
- Understand how cultural differences and lifestyle can affect design. **Be able to write about how lifestyle can affect products.**
- Understand ethics when manufacturing. **Be able to give examples of good and poor ethics in manufacturing.**
- Understand planned obsolescence. Give examples of products **and explain why they have a planned life span.**

Design past and present.

- Know a range of British and International design movements. **Be able to do a timeline of influential Design movements.**
- Know some famous British designers and be able to name and describe products they have designed. **Be able to explain how their designs were influential.**

Environmental.

- Know the 6RS and give examples. **Explain how you could consider the 6RS in your own designs.**
- Understand environmental issues related to manufacturing and give examples**. Explain environmental issues related to your designs.**
- Understand about sustainability, biodegradable materials and landfill and give examples. **Specify sustainable materials you could use for your designs.**

Designing

Investigating

- Use research to inform your designs ideas explain how your research influenced your design ideas. **Include Primary research.**

Communication

- Produce a wide range of design ideas based a design movement. **Explain how your design has influenced by a design movement.**
- To be able to do exploded drawings. Showing hidden detail and **constructional drawings.**
- Use 2D design to draw designs to output to the laser cutter **and milling machine**. With engrave and cut lines. To be able to create tolerance fit joints working to a 0.15 mm tolerance.

Making

- Mark out to 0.5 mm accuracy in all resistant and compliant materials.
- To be able to **skilfully** use a wide range of hand and machine tools.
- To be able to assemble multiple components accurately **without adhesives.**
- To be able to export files to use on CAD/CAM and operate independently **including the milling machine.**
- To finish materials in different ways to a **high standard**

Design and Technology Key stage 3 Assessment
Food and Nutrition

KING EDWARD VI HIGH SCHOOL

	Secure:	Mastered:
Year 7 **'Back to basics – fruit to flapjack'** **Practical skills:** **Hygienic set up, washing up procedures, knife skills, juicing, grating, use grilling, weigh, measure, melting, baking. Use of oven, boiling, blending.** **Commodities: fruit and vegetables,** **butter, oils, margarine and sugars**	Food commodities / Provenance: -I understand that food is processed into ingredients and they can be eaten or used in cooking -I know that food choice can depend on age, needs, religion, personal preferences, seasons and cost Cooking and Preparation: - I can work in an organised way and prepare foods safely and hygienically most times I cook. - I know how to use date marks and storage instructions to ensure my food is safe - I can name and use many pieces of equipment safely and correctly - I can plan cooking activities in the correct order - I know how to use all parts of a cooker - I can make both sweet and savoury dishes - I can suggest ways to change the sensory properties of a dish Nutrition: -I know what 'Healthy eating' is and why it's important - I know that food provides energy and nutrients in different amounts - I can link the 5 main food groups to the main nutrients. - I can discuss the value of fibre in the diet	Food commodities / Provenance: -I know that food is produced, processed and sold in different ways - e.g. conventional and organic farming, fair trade, -I know that food choice can depend on age, needs, religion, personal preferences, seasons and cost AND I can discuss the relevance of 'Food Miles' or buying foods locally. Cooking and Preparation: - I can work in an organised way and prepare foods safely and hygienically every time I cook. - I know about preventing cross contamination and using colour coded boards. - I can produce step by step plans with all information- equipment and ingredients, - I know how to use utensils and electrical equipment safely - I can confidently preheat and control all parts of a cooker independently- I know about applying heat in different ways. - I can suggest ways to change the sensory properties of a dish- to adapt it to other consumers. Nutrition: -I can confidently talk about the 'Eatwell plate', the main nutrients and explain the function (job) of each nutrient. - I can explain the problem of too much / too little of fat / sugar and starch - I can discuss dietary fibre and explain the effects of not eating enough.

KING EDWARD VI HIGH SCHOOL

Design and Technology Key stage 3 Assessment
Food and Nutrition

	Secure:	Mastered:
Year 8 Brilliant Baking' and 'sauce making'. **Practical skills:** Weighing measuring, rubbing in, kneading, proving, shaping, baking, grating, knife skills, sauce making, boiling. **Commodities:** bread, cereals, oats, rice, milk, cheese, yoghurt `	**Food commodities / Provenance**: • I can identify the symbols for organic / fair trade/ food miles and other SMES links to food. • I am aware of some key allergies and why labelling is important. Coeliac / dairy intolerance **Cooking and Preparation**: • I am always organised and hygienic. • I understand the different terms used in date marking-'use by' & 'best before'. • • I weigh and measure accurately all the time • I follow instructions without teacher assistance • I can use the rubbing in method independently • I can knead, shape and prove bread independently • I can suggest ways to change the sensory properties of a dish- to adapt it to other consumers. • I know how to make a roux sauce **Nutrition**: • -I can confidently discuss the 'Eatwell plate', the main nutrients and explain the function (job) of each nutrient. • - I can explain the problem of too much / too little of fat / sugar and starch. • -I can name some vitamins and minerals and link their jobs and sources **Food Science**: • I know and understand the term 'gelatinisation'.	**Food commodities / Provenance**: • -I understand the term 'food miles', 'organic' and 'fair trade' and explain their value. • - I know that food is produced, processed and sold in different ways - e.g. conventional and organic farming, fair trade **Cooking and Preparation**: • I can produce step by step plans with a list of ingredients and equipment. • I can identify key stages in the making process to ensure my food is safe- input safety and quality checks • I know about preventing cross contamination and using colour coded boards. • I can complete all Year 8 cooking skills confidently and independently and teach the method to other pupils in the class. (rubbing in, knead, prove, shape, white sauce, pizza making) • I can suggest ways to adapt a recipe to enhance the sensory and nutritional properties of the dish. **Nutrition**: • -I know how to taste and cook a broader range of ingredients and healthy recipes. • -I can design a healthy dish and explain the function of each ingredient **Food Science**: • -I know and understand the term 'gelatinisation', I can explain the process to others.

KING EDWARD VI HIGH SCHOOL

Design and Technology Key stage 3 Assessment
Food and Nutrition

	Secure:	Mastered:
Year 9 **'Main meals and pastry making** **Practical skills:** Knife skills, preparation of veg, frying, peeling, crushing, stir frying, boiling, mashing, zesting, juicing, marinating, prep of raw meat Commodities: meat, fish, poultry, eggs, Soya, tofu, beans, nuts and seeds.	**Food commodities / Provenance**: -I understand the different ways that eggs and chicken are produced - 'organic' and 'free range' etc.. - I know that food is produced, processed and sold in different ways - e.g. conventional and organic farming, fair trade **Cooking and Preparation:** -I know about specific temperature controls of foods and storage places. -I know the principles of cleaning, preventing cross-contamination, chilling, cooking food thoroughly and reheating food until it is steaming hot -I know how to cook a repertoire of predominantly savoury dishes to feed myself and others a healthy and varied diet -I can use a wider range of preparation techniques and methods when cooking -I can cook different recipes to suit a range of needs, wants and values. -I can suggest ways to adapt recipes to increase the fibre content. Skills : separate, zest, stir-frying, steaming **Nutrition**: -I can design a healthy dish and explain the nutritional value of most ingredients. - I know the implications of dietary excess or deficiency. eg. malnutrition, maintenance of a healthy weight.	**Food commodities / Provenance**: **Cooking and Preparation**: -I can identify how food is preserved and confidently explain the term 'Danger Zone' giving detail and examples. I know all key food safety temperatures. -I know how to cook a repertoire of predominantly savoury dishes to feed myself and others a healthy and varied diet -I can use a wider range of preparation techniques and methods when cooking -I can cook different recipes to suit a range of needs, wants and values -I know how to actively minimise food waste such as composting fruit and vegetable peelings and recycling food packaging Skills: drizzle, pipe, portion, bake blind, **Nutrition**: - I know how to modify recipes and cook dishes that promote current healthy eating messages. - I can use a nutritional analysis programme to establish the nutrient content of a dish I've made…..and discuss changes to alter nutrient content. - I can confidently discuss all key nutrients, their job in the body, their sources – including 3 main vitamins and minerals.