The King's CHURCH OF ENGLAND ACADEMY KIDSGROVE

Curriculum plan: DT

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INTENT:

"The way you learn anything is that something fails, and you figure out how not to have it fail again"

Robert Arrighi

Studying engineering at The King's allows students to understand the mechanical and physical environments of their surroundings. It helps students to foster a sense of inquisitiveness, appreciating how problems are solved and in what environment these solutions can continue to be developed so they remain in tune with our ever changing world.

As a department, we aim to provide our students with the necessary theoretical knowledge, understanding and practical skills to manufacture solutions to realistic world problems and scenarios. The strong emphasis on problem solving is linked intrinsically with creativity where students are encouraged to push boundaries, challenge the status quo and continually think 'outside of the box'.

Sharing our passion and deep subject knowledge equips our students with high quality learning experiences which will inspire, ensure outstanding progress and provide them with a range of skills to enable them to be effective participators in society. They will study a wide range of topics and have learning experiences which will widen their understanding of the mechanical and physical world. Students will be challenged by difficult tasks and be asked to respond to a range of demanding activities which will push students to value creativity and harness a deep knowledge of materials, properties and manufacturing processes.

KS3 hours over 2 weeks.

1 Design, Technology & Engineering core.
2 Food/Design & Technology.

40 weeks

20 lessons core.
20 lessons Food.
20 lessons Design & Technology

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	Half term points					
	AUTUMN 1	**AUTUMN 2**	**SPRING 1**	**SPRING 2**	**SUMMER 1**	**SUMMER 2**
7	**Split 1** **Learning to include:** What is a design brief? What is a design specification? What is a mood board. Materials importance. How to think like a designer. Linking designing to the 6R's of sustainability? **Split 2** **Learning to include:** Creature Feature Desk Tidy: What is CAD and CAM? What is a Laser Cutter? Why is Product analysis a useful process for Designers? What is a Design Brief? Write a Design Specification for your Desk Tidy.	**Split 1** **Learning to include:** Knowing and learning to draw initial design ideas, improvement designs and finial designs. Health and safety in the workshop. Learning about tools. Links with Maths: skills, knowledge and tools. Building confidence in the workshop. How to measure and mark. Using tools correctly and safely to make block bot. **Split 2** **Learning to include:** Creature Feature Desk Tidy: Develop skills using 2D Design CAD software: Know how to setup a CAD drawing layout; Use a range of drawing tools; Know how to construct a drawing template; Learn	**Split 1** **Learning to include:** How to measure and mark. Using tools correctly and safely to make block bot. Safety in action practice. How to use a bench hook, tenon saw, try square, pillar drill, belt sander. Creating Block Bot design using skills and knowledge. Ansalsing final outcome according to ACCESS FM. **Split 2** **Learning to include:** Creature Feature Desk Tidy: Building on CAD skills learnt in previous lesson design a "Creature Feature" image for a proposed Desk Tidy. Evaluate designs by checking against Design Specification.	**Split 1** **Learning to include:** What is a design brief? What is a design specification? What is a mood board. Materials importance. How to think like a designer. Linking designing to the 6R's of sustainability? **Split 2** **Learning to include:** Creature Feature Desk Tidy: What is CAD and CAM? What is a Laser Cutter? Why is Product analysis a useful process for Designers? What is a Design Brief? Write a Design Specification for your Desk Tidy.	**Split 1** **Learning to include:** Knowing and learning to draw initial design ideas, improvement designs and finial designs. Health and safety in the workshop. Learning about tools. Links with Maths: skills, knowledge and tools. Building confidence in the workshop. How to measure and mark. Using tools correctly and safely to make block bot. **Split 2** **Learning to include:** Creature Feature Desk Tidy: Develop skills using 2D Design CAD software: Know how to setup a CAD drawing layout; Use a range of drawing tools; Know how to construct a drawing template; Learn how to label files	**Split 1** **Learning to include:** How to measure and mark. Using tools correctly and safely to make block bot. Safety in action practice. How to use a bench hook, tenon saw, try square, pillar drill, belt sander. Creating Block Bot design using skills and knowledge. Ansalsing final outcome according to ACCESS FM. **Split 2** **Learning to include:** Creature Feature Desk Tidy: Building on CAD skills learnt in previous lesson design a "Creature Feature" image for a proposed Desk Tidy. Evaluate designs by checking against Design Specification. Prepare CAD image for CAM.

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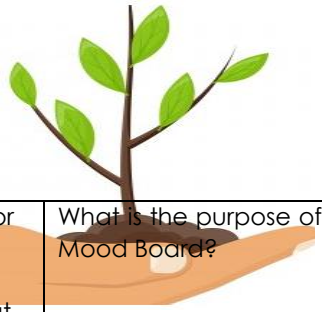

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	What is the purpose of a Mood Board? **Core Lesson** **Learning to include:** Introduction to DT, identifying materials, products and properties. What are forces and how does this link to a material? Introduction to Memphis and Art Deco Design Movements.	how to label files correctly Know how to edit and modify a CAD drawing; Know how to use a Tool Path tool and to Vectorise an image. What is acrylic? **Core Lesson** **Learning to include:** Learning to draw one point perspective cubes. Learning to draw on isometric paper, practicing and improving skills. What is Design, Technology and Engineering?	Prepare CAD image for CAM. Prepare wood base; measure, mark-out, cut and shape. Final fix: mount laser cut acrylic design on wood. Evaluate prototype Design Specification. **Core Lesson** **Learning to include:** What are the sectors? Identifying how the 6Rs link within design and technology. Learning about the design process, research and its importance. Understanding of products, materials, functions and customers wants.	What is the purpose of a Mood Board? **Core Lesson** **Learning to include:** What are the different materials? – wood focus. ★ Categories of wood. ★ Sourcing of wood. ★ Past uses. ★ Properties. ★ Sustainability of wood. ★ Environmental issues.	correctly Know how to edit and modify a CAD drawing; Know how to use a Tool Path tool and to Vectorise an image. What is acrylic? **Core Lesson** **Learning to include:** What are the different materials? - metal focus. ★ Categories of metal – ferrous and non-ferrous. ★ Sourcing of metal. ★ Past uses. ★ Properties ★ Sustainability of metal and recycling. ★ Environmental issues.	Prepare wood base; measure, mark-out, cut and shape. Final fix: mount laser cut acrylic design on wood. Evaluate prototype Design Specification. **Core Lesson** **Learning to include:** What are the different materials? - plastic focus. ★ Categories of plastic – thermoforming and thermosetting. ★ Sourcing of different plastics. ★ Past uses and links to ivory. ★ Properties ★ Sustainability of plastic and recycling. ★ Environmental issues.

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8	Half term points					
	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2

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	Split 1 H&C Learning to include: What is safety How does safety look in the food room How to be safe when turning on equipment What are the safety cutting techniques What the types of contamination and how to prevent. How to clean as you go. Personal and food hygiene in the food room, at home and businesses. Properties of metal and plastic – uses and safety points in the food room. How to make salt and pepper chips. How to make chicken Goujons **Split 2** **Learning to include:** Passive Speaker Practical: Orthographic drawing What are the different wood joints? How do we measure and mark-out wood and manufactured board? What are the different timber materials? Produce a Design Brief and Design Specification	**Split 1 H&C** Learning to include: How to measure and weight ingredients What are the hazards of boiling water and blending Food safety legislation How to make Leek and Potato soup/short bread safety. How to knead dough. Personal and food hygiene in industry (businesses) How to be safe in the food room around equipment, food and machines. How to make a pizza. **Split 2** **Learning to include:** Passive Speaker Practical: What is a Mood Board? Learning how to Mark out materials Safety in the workshop Identifying hazards and knowing the correct Control Measures Cut and shape materials using a range of hand tools and equipment Experiencing Joining processes	**Split 1 H&C** Learning to include: How to adapt your seasoning to your own taste. Health and safety of food and personal safety. How to make Chicken Tikka Pasty How to identify hazards in the food room. Personal and food hygiene in industry and the food room. How to make spicy Bolognese and garlic dough balls. **Split 2** **Learning to include:** Passive Speaker Practical: Safety in the workshop Quality Control checking work Using iterative design process to achieve best sound quality, test volume control. Final fix and assembly Surface Decoration applied. Evaluate final product	**Split 1 H&C** Learning to include: What is safety How does safety look in the food room How to be safe when turning on equipment What are the safety cutting techniques What the types of contamination and how to prevent. How to clean as you go. Personal and food hygiene in the food room, at home and businesses. How to make salt and pepper chips. How to make chicken Goujons **Split 2** **Learning to include:** Passive Speaker Practical: Orthographic drawing What are the different wood joints? How do we measure and mark-out wood and manufactured board? What are the different timber materials? Produce a Design Brief and Design Specification	**Split 1 H&C** Learning to include: How to measure and weight ingredients What are the hazards of boiling water and blending Food safety legislation How to make Leek and Potato soup/short bread safety. How to knead dough. Personal and food hygiene in industry (businesses) How to be safe in the food room around equipment, food and machines. How to make a pizza. **Split 2** **Learning to include:** Passive Speaker Practical: What is a Mood Board? Learning how to Mark out materials Identifying hazards and knowing the correct Control Measures Cut and shape materials using a range of hand tools and equipment Experiencing Joining processes Isometric drawing	**Split 1 H&C** Learning to include: How to adapt your seasoning to your own taste. Health and safety of food and personal safety. How to make Chicken Tikka Pasty How to identify hazards in the food room. Personal and food hygiene in industry and the food room. How to make spicy Bolognese and garlic dough balls. **Split 2** **Learning to include**: Passive Speaker Practical: Quality Control checking work Using iterative design process to achieve best sound quality, test volume control. Final fix and assembly Surface Decoration applied. Evaluate final product

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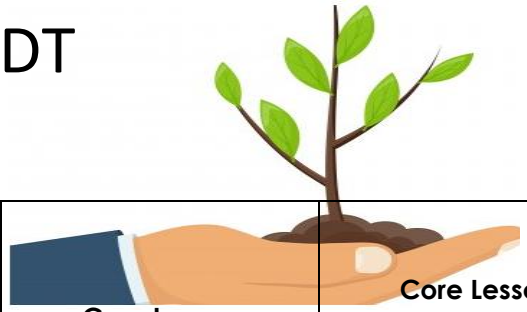

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	Core Lesson	Isometric drawing **Core Lesson**	**Core Lesson**	**Core Lesson**	**Core Lesson**	**Core Lesson**

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	Learning to include: Learning Objectives: What are designing principles? What is primary and secondary research? Why is research necessary? What is Product Analysis? Why is it useful for designers? What is a Design Specification? Why is a Design Specification needed? Aesthetics vs Functionality. What is the role of a Focus Group? How is anthropometrics and ergonomics used in the design process?	**Learning to include:** Learning Objectives: What is the meaning of anthropometrics? How does anthropometric data inform designers? Why are graphs and charts used? How do immoveable constraints affect design briefs and Design Specifications?	**Learning to include:** Learning Objectives: What is a Design Specification and how is it different from a Manufacturing Specification? Why is a testing a product during development so important? What is iterative design? What impact does iterative design have on products?	**Learning to include:** Learning Objectives: What is isometric drawing? Why is it necessary? Who? Where? When? How do you sketch and render isometric drawings? Communication graphic techniques; how are they different? Demonstrate isometric drawings with 2 Tone and three-tone shading. Demonstrate applied shadows	**Learning to include:** Learning Objectives: One-point perspective drawing: demonstrated using Cuboid and letterforms. Two-point perspective drawing using cuboids, letters and building themes What career paths are dependent on technical communication graphic skills?	**Learning to include:** Learning Objectives: Isometric drawing revisited. Introduction to orthographic projection drawing: 3rd and 1st Angle. Explore the work of others; Designers How can you improve the functionality of materials?

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Half term points

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
9	**Hospitality & Catering** **Learning to include:** Students will learn about a range of different hospitality	**Hospitality & Catering** **Learning to include:** Students will learn about the different standards and ratings	**Hospitality & Catering** Learning to include: Students will analyse the job requirements within the hospitality	**Hospitality & Catering** **Learning to include:** Groups rotate. Same as autumn 1.	**Hospitality & Catering** **Learning to include:** Groups rotate. Same as autumn 2.	**Hospitality & Catering** **Learning to include:** Groups rotate. Same as Spring 1.

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	and catering providers and the different types of service which they provide. Students will learn about the range of different non-commercial catering establishments and the different types of products or services which they provide. Students will learn about a range of different suppliers and the environmental issues and implications of the 'global market place". 3 practical cooking sessions. **Split 2 WOOD BIRDBOX Learning to include:** What is Pop Art What is a design brief Thinking like a designer Pop Art design in the style of Roy	which the hospitality and catering providers have. Students will learn about the different job roles within the industry (management, kitchen brigade, front of house, housekeeping, administration). Students will analyse the job requirements within the hospitality and catering industry. They will cover content related to :- Supply and demand (availability of trained staff, seasonality, location). 3 practical cooking sessions **Split 2 WOOD BIRDBOX Learning to include:** Health and safety at work. Health and safety in the workshop. Joining methods strengths and	and catering industry. They will cover content related to :- Qualifications and experience. Personal attributes. Students will understand the different working conditions of the different job roles across the hospitality and catering industry. The will learn content on the topic of:- Different types of employment contracts. 3 practical cooking sessions. **Split 2 WOOD BIRDBOX Learning to include:** Developing and working to have high skills such as: problem solving, communication,	**Split 2 WOOD BIRDBOX Learning to include:** What is Pop Art What is a design brief Thinking like a designer	**Split 2 WOOD BIRDBOX Learning to include:** Health and safety at work. Health and safety in the workshop. Joining methods strengths and weakness. How to	**Split 2 WOOD BIRDBOX Learning to include:** Developing and working to have high skills such as: problem solving, communication, resilience and

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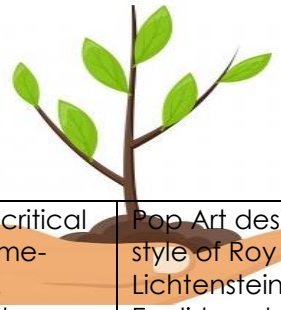

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	Lichtenstein – links to English verbs and onomatopoeia. Analysing strengths within designs on the market and linking to target audience. **Core Lesson.** **Learning to include:** Manual production of freehand sketches. * 2D/3D sketches * Thick/thin lines * Annotation and labelling techniques: explain key features, functions, dimensions, materials.	weakness. How to identify a hazard and a risk. Knowing your responsibilities to keep yourself and others safe. **Core Lesson** **Learning to include:** Manual production of freehand sketches. * Texture * Shading * Annotation and labelling techniques: explain key features, functions, dimensions, materials.	resilience and critical thinking and time-management. Identifying and addressing mistakes made in samples, what not to do. Designing and improving to create a final design. Measuring, marking and making birdbox. Using initiative to adapt design ideas and decorative outcome. **Core Lesson** **Learning to include:** Manual production of engineering drawings. * produce a 3rd angle orthographic projection drawing that includes a range of dimensions * produce an assembly drawing that shows the main elements of developed concepts	Pop Art design in the style of Roy Lichtenstein – links to English verbs and onomatopoeia. Analysing strengths within designs on the market and linking to target audience. **Core Lesson** **Learning to include:** Use of computer aided design (CAD) 2D design. * use CAD to produce 2D virtual models of design proposals * within your CAD drawings add layers. * render your design with different viewpoints * show your virtual model from different viewpoints	identify a hazard and a risk. Knowing your responsibilities to keep yourself and others safe. **Core Lesson** **Learning to include:** Use of computer aided design (CAD) Solid edge. Parts and assembly. * use CAD to produce 3D virtual models of design proposals * within your CAD drawings add rendering, textures, dimensioning and assembly views. * render your design with different viewpoints	critical thinking and time-management. Identifying and addressing mistakes made in samples, what not to do. Designing and improving to create a final design. Measuring, marking and making birdbox. Using initiative to adapt design ideas and decorative outcome. **Core Lesson** **Learning to include:** Use of computer aided design (CAD) Solid edge. Sheet metal work. * use CAD to produce 3D virtual models of your design proposals * within your CAD drawings add rendering, textures, dimensioning and assembly views. * render your design with different viewpoints

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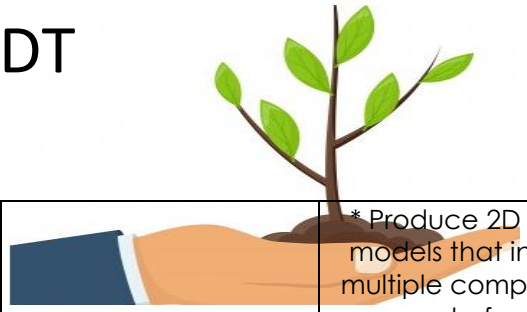

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				* Produce 2D virtual models that include multiple components as part of a CAD assembly.	* show your virtual model from different viewpoints * Produce 3D virtual models that include multiple components as part of a CAD assembly.	* show your virtual model from different viewpoints * Produce 3D virtual models that include multiple components as part of a CAD assembly.