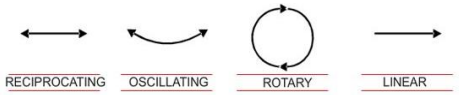
Seahaven Academy **Curriculum Overview** **Subject: Design & Technology/3D Design**

Art
Photography
3D Design &Technology
Food Preparation & Nutrition

DESIGN & TECHNOLOGY + 3D Design Curriculum Overview 2025/26

Year		Design and Technology at KS3 is delivered on a carousel system between D&T and FOOD. The KS3 overview below is of the Design Skills and Product Design areas of Design and Technology that each group will undertake on rotation during the academic year.	Assessment	Vocabulary mapping
7	1-3 or 4-6	Mechanisms **Why this? Why now?** This unit aims to **build on a basic awareness** of simple mechanisms which many primary schools explore as part of their Design and Technology offer. We look at the everyday objects as examples of simple mechanisms in order to **build confidence** in recognising simple mechanisms. The unit aims to add to prior experiences of identifying levers, wheel and axles and pulleys by **introducing more specific knowledge** about input, output and movement to ensure all students have the same depth of information and understanding of keywords. In this unit, modelling is used to help reinforce concepts as well as being a way to **encourage exploration** create their own examples, motion and the interaction of moving parts. Isometric drawing is introduced as a way of **communicating three dimensional ideas** on paper and will continue to be developed in Year 8. Modelling skills, **working with a**	In class feedback Ongoing recap activities H&S Passport check. End of project assessment paper including multiple choice, short answer, creative and technical drawing and designing as well as evaluation questions.	**Mechanism** - a device that transforms input forces and movement into a desired output force and movement **Device -** an object that has been made or built for a particular purpose, **Transform -** to change the physical or energetic property of something in order to make something else or create an action. **Input** - something, such as energy, that is applied or put into a system. **Output -** the amount of something produced or, the end result of a process. **Force -** strength or energy causing motion or change. **Movement –** the act, process or result of moving.

		variety of materials, is also introduced as an important part of the design process that will form the basis of testing ideas in future projects. Students will: • Know a range of simple mechanisms and their key features. • Understand mechanical advantage and how a range of simple mechanisms work. • Recognise different types of motion • Be able to recognise and model simple lever and linkage mechanisms as part of a team. Students will: • Know where the input, process and output feature in a cam-based mechanism. • Understand the interaction between physical parts of a working model and how more advanced mechanical systems enable changes in movement and force. • Be able to assemble modelling materials to create a simple working cam driven mechanism.		**Effort** - the energy applied to do something **Fulcrum –** the point at which somethings turns or pivots **Load –** a weight or mass that is supported **Mechanical advantage** is the amount of help you get using a machine in comparison to doing something with just human effort. **Cam -** A cam is a rotating or sliding piece in a mechanical linkage used especially in transforming rotary motion into linear motion TYPES OF MOTION **Reciprocating –** back and forth **Oscillating** – moving repeatedly form one position to another **Rotary –** around in a circular motion **Linear** – in a line 
	1-3 or 5-6	Mini Torch **Why this? Why now?** This unit aims to **raise awareness** of environmental responsibility in Design and Technology. We look at the life cycle of a plastic bottle to illustrate information and **give more detail to existing knowledge** about the negative impact of plastics on the environment. We look at the 6R's	In class feedback Ongoing recap activities H&S Passport check. End of project assessment paper including multiple choice, short answer, creative and technical	**Plastic** - A synthetic material made from polymers **Sustainability** - The ability to maintain or support a process continuously over time. **Hand Tools** - A selection of objects that are used to make things **HDPE** - High Density Polyethylene. A type of recyclable plastic.

		sustainability to help **build confidence** in understanding ways individuals as consumers as well as designers can **make informed choices** to help the planet. The unit introduces our **Health and Safety** passport which travels with the students through KS3 as a record of the skills and safe working shown on hand tools and machinery in the workshop. Students work with recycled plastic materials to **learn how to use basic hand tools safely and effectively.** Students are also **introduced to Computer Aided Design (CAD)** in this unit **learning the basic skills** on the 2D Design program that is used throughout KS3 and KS4. Students will: • Understand how plastic products can impact our planet. • Be able to identify the 6 Rs of sustainability • Use recycled materials to create a product Students will: • Know the health and safety requirements for using tools and equipment safely. • Understand the key functions and basic tools of the 2D design CAD package. • Be able to use skills in Computer Aided Design (CAD) / Computer Aided Manufacturing (CAM) to follow a guide to create a mini torch design including a repeat pattern surface decoration	drawing and designing as well as evaluation questions.	**Design** - a plan or drawing produced to show the look and function of a product **Evaluation** - to judge or calculate the quality, importance, amount, or value of something **Delete Tool** - A tool on 2D Design that allows us to delete parts of a design. **CAD** – Computer Aided Design **CAM** - Computer Aided Manufacture **Tessellation**- An arrangement of shapes closely fitted together, especially of polygons in a repeated pattern without gaps or overlapping. **M.C. Escher** - A Dutch graphic artist who made mathematically inspired woodcuts **Exploded Drawing** - A technical drawing style that shows the individual parts or the assembly order of an object as a diagram. **Circuit** - a complete and closed path around which a circulating electric current can flow. **Assembly** - the action of fitting together the component parts of a machine **Recycle** – Take an existing product that has been used and re-process the material for use in a new product. **Reduce** - Minimise the amount of material and energy used during the whole of a products life cycle.

				Rethink - Our current lifestyles and the way we design and make **Reuse** – Take an existing product that has become waste and use it to create a new product. **Refuse** – To not consider using a certain type of material or process **Repair** - When a product breaks down or doesn't function properly, fix it. **Sustainability** refers to the ability to maintain or support a process continuously over time. In design we can think about how we select, source and use materials to avoid of the depletion of natural resources, in order to maintain an ecological balance.

8	**1-3 or 5-6**	Flat Pack **Why this? Why now?** This unit looks at design in the context of small living spaces **introducing students to the idea of a Design Context and Design Brief** where they may be **designing for others** which **builds on the idea in KS2 of designing products for people for a purpose..** We **introduce historical context** in design looking at the birth and popularity of flat pack design as well as aiming to **build on an awareness of the world around them** buy showing where flat pack design can be used in times of conflict and natural disaster as well as the social context of temporary accommodation. Students **develop their modelling skills** from year 7 to a point where they can **test and modify designs to make accurate working models.** They also continue to **build on their Computer Aided Design (CAD) skills** in this unit. Students will: • Know the principles of stable structures. • Understand and use the properties of materials and the performance of structural elements in flat pack design • Be able to investigate problems, explore design solutions and communicate design ideas using annotated sketches, detailed plans, oral or digital presentations Students will:	In class feedback Ongoing recap activities H&S Passport check. End of project assessment paper including multiple choice, short answer, creative and technical drawing and designing as well as evaluation questions.	**compact** - Occupying little space **Collapsible** - able to be folded into a more compact shape **Stability** - to measure of how likely it is for an object to topple over when pushed or supported **Self-supporting** - means that the structural components, by itself, without additional **Symmetry** - Something is symmetrical if it exists in the same or both sides around **Triangulation** - is the use of triangles to **CAM** - Computer Aided Manufacture **CAD** – Computer Aided Design **Force** - strength or energy causing motion or change, see below. Flat pack products are those manufactured in 'flat' or separate parts that can be more easily transported and are often able to be assembled with limited tools and expertise.

		• Know the advantages and disadvantages of CAD/CAM. • Understand the basic tools for creating CAD drawings in 2D Design. • Be able to use skills in Computer Aided Design (CAD) / Computer Aided Manufacturing (CAM) to create a flat pack prototype.		
	1-3 or 5-6	Ergonomics **Why this? Why now?** This unit looks at design in the context of improving handwriting of younger students. This project continues to build on the idea of **designing for others** and using a **Design Context and Design Brief as** a starting point for **research**. Students are **introduced to ACCESSFM** a widely used design criteria which create a framework for building analytical skills. They learn how they can conduct research by **investigating existing products,** as well as **modelling to test ideas, building on skills from year 7.** Students will: • Analyse a design context and brief	In class feedback Ongoing recap activities H&S Passport check. End of project assessment paper including multiple choice, short answer, creative and technical drawing and designing as well as evaluation questions.	**Analyse** - To examine in detail, typically in order, to explain and interpret it. **Design Brief** - A short written description that outlines what a project or product should do. **Anthropometry** - study of the measurements and proportions of the human body **Ergonomics** - The study of people and their relationship with the environment in which they live. Designing according to best suited purpose. **Modelling Foam** - Craft Foam, otherwise known as Styrofoam is a light foam material used for making models and prototypes. **Orthographic Drawing** - A 2-D representation of an object in a view that shows only one side at a time. **Final Design Ideas** - The drawing or range of drawings used to show changes and becomes more advanced. **Development** - the process in which someone or something grows and develops. **Health and Safety** - regulations and procedures intended to prevent accidents or injury in workplaces or public environment **Evaluation** - The process of judging or calculating the quality, importance, amount, or value of a product. **Wood Finishes** - A way of protecting wood as well as helping to add aesthetic qualities. **Product Evaluation** - the making of a judgement about a finished product based on certain values. **Assessment** - The act of assessing achievement relating to a specific criteria. **Orthographic drawing** - A 2-D representation of an object in a view that shows only one side at a time.

		• Analyse existing products using specific ACCESSFM criteria • Understand the term Ergonomics • Understand how use of Ergonomics can be used to improve designs. • Be able to communicate their ideas in 2D and 3D as well as using modelling to test and improve design ideas. Students will: • Know the Health and Safety requirements for using tools and equipment safely. • Understand how the modelling process informs the planning and making in working with resistant materials. • Be able to use tools and processes safely and with some skill to produce an ergonomic product in wood.		
9	**1-3 or 5-6**	PRODUCT DESIGN – Enamelling **Why this? Why now?** The year 9 projects aim to **consolidate practical skills** in preparation for the **transition to GCSE.** The enamelling projects uses abstract art as a starting point for design ideas, which is more in line with the theme and artist based starting points of the GCSE course. We use the basic elements of art and design to investigate abstract works and then create design based on line, shape, colour, and space. There is a focus on **layout to show the design process and evidence work in a way that reflects the GCSE expectations.**	In class feedback Ongoing recap activities H&S Passport check. End of project assessment paper including multiple choice, short answer, creative and technical drawing and designing as well as evaluation questions.	**Malleable** - capable of being extended or shaped **Coating -** a thin layer or covering of something **Fuse -** join or blend to form a single entity **Counter enamel** –to enamel on the reverse side **Degrease** -remove build-ups of grease to clean a surface **Sieve** – to separate small particles form larger ones using a mesh **Wet and dry paper** – a type of abrasive paper or sandpaper used wet or dry to smooth a surface Abstract – Does not attempt to represent an accurate depiction of real objects or events. **Analyse** – To examine something in detail, typically in order, to explain and interpret.

		In his project we introduce **specialist equipment** with the enamelling kiln and **build practical skills** to work specifically with metal. The practical work is smaller scale and requires **attention to detail** more **appropriate for the older KS3 students.** Students will: • Recognise the key elements of design including Colour, line and shape. • Use art movements as a starting point for 3D product design ideas • Be able to communicate design ideas in both 2D and 3D for a range of ideas Students will: • Identify some basic properties of metals • Understand the stages in the safe working with metals and enamelling kiln • Be able to use tools and processes safely and with some skill to produce a quality product in metal.		

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	1-3 or 5-6	DESIGN SKILLS – Casting **Why this? Why now?** The year 9 projects aim to **consolidate practical skills** in preparation for the **transition to GCSE.** We look at cultural symbols as a **starting points for design ideas to support outward looking research points for ideas. There is a focus on layout on larger sheets rather than a A4 books to help prepare for KS4 expectations. Work is expected to be presented in a way that evidence research, designing and experimentation showing the whole design process. This project continues to build on practical skills** to work specifically with metal. In his project we introduce **specialist equipment** with the Pewter **casting process** either brazing hearth or gas torch. The practical work is smaller scale and requires **attention to detail** more **appropriate for the older KS3 students.** Students **further develop their 2D design skills** with attention to **creating accurate moulds** and with the **opportunity to include layers and a mixture of materials.** Students will be given the opportunity to **extend their Computer Aided Design to 3D 'Sketch up' CAD modelling.** Students will: • Know the difference between negative and positive space in the moulding and casting process. • Understand how research and exploration different cultures can be used to inform design ideas. • Be able mark and measure an accurate template for cutting a suitable casting mould using Computer Aided Design.	In class feedback Ongoing recap activities H&S Passport check. End of project assessment paper including multiple choice, short answer, creative and technical drawing and designing as well as evaluation questions.	**Mould** - a hollow container that you pour a liquid into. When the liquid becomes solid it takes the same shape as the mould. **Casting**- is the act of making an object by pouring molten metal or other material into a mould. **Vacuum Forming** – is a moulding process that uses vacuum pressure to force a sheet of heated plastic onto a mould. **Solidify** - to change from being a liquid or gas to a solid form. **Adinkra** – symbols from Ghana that Adinkra ... extensively in fabrics, logos and pottery. **CAD** – Computer Aided Design **CAM** - Computer Aided Manufacture A **vector graphic** is an image made up of ... solid coloured square pixels ... rather than **Symbol** – something used to stand for or represent something else. **SEMIO Analysis** – The way we analyse ... Opinion ... Materials ... **2D Design** - A piece of computer software that allows the user to develop 2 dimensional outlines that can be manufactured on a CAM (Computer Aided ... axis. **Vector Graphics** - An image made up of ... solid coloured square pixels ... rather than **Brazing Hearth** – This is a specialist piece of equipment when working with metals. pewter for casting and other processes for working **Cast** - is an object that has been made by pouring a liquid such as plaster or metal into something, so that when it hardens it has the same shape as that thing. **Polishing** - To make the surface of (something) smooth and shiny by rubbing it **Product Evaluation** – the making of a judgement about a finished product based on certain values

		Students will: • Know the health and safety requirements for using tools and equipment safely. • Understand the stages in the safe moulding and casting process for pewter. • Be able to use tools and processes safely and with some skill to produce a quality product in metal.		
10 3D Design	**1-3**	Natural Forms **Why this? Why now?** The first year 10 project aims to **consolidate practical skills** learnt in KS3 using wood, metal and plastic as well as **introduce new materials** in clay, soap stone and compressed modelling foam to further **build skills working in three dimensional design**. The natural forms project takes inspiration from the shapes, forms, patterns and textures in nature to **build observational drawing skills** and **experimentation with a variety of modelling techniques, making process and the opportunity to work with a wide variety of materials.** Students will use artists, designers, sculptors and scientists as starting points for research and inspiration and will be guided through a structures set of	Project Checklists, Individual Feedback and Personal Learning Checklist (PLCs) used 'PINK POINTS' Mock examination 5 hours Teacher marked and moderated followed by Exam board Moderation	• To **analyse** means to break down an artwork or design into its components (like form, color, and technique) in order to understand its meaning, structure, or impact. • To **develop** a design or product refers to the process of refining and evolving an idea or concept over time, often through multiple iterations and adjustments in technique. • To **investigate** means to carefully examine a subject, idea, or technique, often seeking to uncover new perspectives or deeper insights. • To **explore** involves experimenting with different media, styles, or

		workshops to **produce evidence relevant to the four assessment objectives** of the GCSE course. This project will focus on hand making skills although there will be opportunities to use 2D design and sketchup as practiced in KS3. An extension will be offered where **students develop their ideas further to work in a public setting** referencing many of the local public art sculptures. Students will look at scale, context and the implications of public art.	Assessment against AO1, AO1, AO3 + AO4 objectives as set by the exam board.	concepts to discover new possibilities and ways of expressing ideas or emotions. • To **respond** in art means to react to a particular stimulus, context, or theme, using creative expression to convey one's reaction or interpretation of the situation. • **Limited**: A small amount of skill or evidence shown. • **Basic**: A simple level of skill or evidence shown level • **Emerging**: Skill is just starting to become visible or shown through the evidence presented. • **Competent**: Clear skill shown in the evidence. • **Consistent**: Skill is shown across the body of evidence presented. reliable. • **Confident**: There is an assured level of skill shown across the body of evidence presented. • **Exceptional**: The skill and work shown is consistently outstanding and over and above what would be expected at this stage.
	4+5	Light and Dark **Why this? Why now?** The second year 10 project will use the theme of light and dark as a starting point. Experimentation will continue to look at the elements of art and design by exploring line, shape, space, contrast and pattern. Students will be **introduced to a range of historical design styles** as well as architecture and focus on positive and negative space introduced in year 9 D&T. Students will **build on their KS3 skills in using on 2D Design and 3D Sketchup** to create computer aided design drawings as a way of exploring ideas as well as creating final designs for manufacture. Students will be working mainly with wood including veneer and laser cut work as well as hand skills but will allow for the addition of other materials during their experiments and in their final design. The extension to this task will take students into year 11 and included the		

		opportunity for more individual pathways in a support way to build confidence in the development of own their designs through personal research and experimentation as is expected during the final exam project starting in the January of year 11. .		
	6	**Light and Dark Mock exam (5 hour)** **Why this? Why Now?** This mock exam session gives students a clear understanding of the routines and expectations for undertaking a practical mock exam. The scene is set for a full day in the workshop to produce a final piece, developed on the theme of light and dark and planned through portfolio work in lessons.		
11 3D Design	**1+2**	**Coursework consolidation** **Why this? Why Now?** A period of coursework consolidation at the start of Year 11 helps to support reflective practice. The aim is to provide opportunities for students to reconnect with their work over the past year, act on individual feedback points and make progress through the assessment criteria categories from Limited, Basic, Emerging, Competent, Consistent, Confident, Exceptional. Although students are introduced to this language of assessment during the end of KS3 and start of KS4, it is often only at this point that they have fully	Assessment against AO1, AO1, AO3 + AO4 objectives as set by the exam board.	

		processed the terminology in relation to their designs and products as a body of coursework. This deeper understanding now informs improvements and further development of work and outcomes in order to raise achievement.		
	3 + 4	Exam Project **Why this? Why now?** The exam project is a 12 week project that r**equires student to respond to a theme set by the exam board** on January 1st in year 11**.** Student will have prepared by undertaking the two initial projects in a **supported and structured journey through the design process. This project is where they put what they have learnt into practice and apply the design process to the given theme. They will undertake relevant workshops to help them experiment with materials and allow them to explore ideas relevant to the theme.** **In the April of year 11 they will undertake 10 hours in the workshop making their final product with no creative assistance during this supervised time.** • **AO1 - Develop ideas through investigations, demonstrating critical understanding of sources.** • **AO2 - Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.** • **AO3 -** Record **ideas, observations and insights relevant to intentions as work progresses.**	Preparation in lesson in response to exam board set topic, followed by Formal 10 hours practical exam. Project Checklists, Individual Feedback and Personal Learning Checklist (PLCs) used Assessment against AO1, AO1, AO3 + AO4 objectives as set by the exam board. Teacher marked and moderated followed by Exam board Moderation	• **Limited**: A small amount of skill or evidence shown. • **Basic**: A simple level of skill or evidence shown level • **Emerging**: Skill is just starting to become visible or shown through the evidence presented. • **Competent**: Clear skill shown in the evidence. • **Consistent**: Skill is shown across the body of evidence presented. reliable. • **Confident**: There is an assured level of skill shown across the body of evidence presented. • **Exceptional**: The skill and work shown is consistently outstanding and over and above what would be expected at this stage.

		• **A04 - Present a personal and meaningful response that realises intentions and demonstrates understanding of visual**		
	5	**Exam Project – 10 Hour Practical exam** **Why this? Why now?** This is the final assessment task as directed by the exam board where students undertake 10 hours in the studio creating/making their final piece with no creative assistance during this supervised time.		
	6	N/A		