



Year 10 D&T Curriculum Summary



YEAR GROUP: 10

SUBJECT: Design & Technology: Product Design

When?	Key Learning Questions	Teaching/Learning methods	Assessment
	<p><u>Art deco clock:</u> A small design and making task. Research & Analysis of the problem with a simple specification. The pupils will be introduced to the iterative design cycle. Creating a range of design ideas work with a set specification and a limited number of their own points. Also working from a set materials list. Development & final idea to be modelled before manufacture. Knowledge & skills; Thermo plastics/plastic memory. Shaping & cutting Acrylic. Cleaning up the edges & polishing. Using the strip heater. CAD/CAM – using the vinyl cutter to add decal.</p>	<p>Lessons are broken down into 8 minute sections subliminally (maximum attention span of young adolescents). As this is a practical based lesson with new skills being acquired and then further developed, demonstrations are kept minimal to maintain effectiveness. After 8 minutes pupils are refocused using questioning or another demonstration. Plenaries are used at the end of the lesson to tie up loose ends and embed the learning of the lesson. The aim of the year 10 Design and technology curriculum is to develop fine motor skills and to introduce the concept of mapping and logging their ideas and work so that they are familiar with this so that in year 11 they can integrate these skills into their NEA portfolio.</p> <p>Demonstrations on and including Health and safety and usage of PPE :</p> <ul style="list-style-type: none"> • Using the heegner saw • Bending plastic • Drilling plastic • Polishing plastic • Using the vinyl cutter • Joining plastics <p>Demonstrations on and including Health and safety and usage of PPE :</p> <ul style="list-style-type: none"> • Marking out using a plan • Using the brazing hearth • Bending of metals; hot and cold. 	<p>The pupils are assessed using the following mediums:</p> <ul style="list-style-type: none"> • Higher order questioning • Peer discussion • Self-assessment • Peer assessment • Practical outcomes • Quality of portfolio work (grading and marking based on attainment and effort)



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	<p>Pupils will research the Art Deco design movement and focus on the work of others.</p> <p><u>Balancing toy:</u> The pupils will be reintroduced to metallurgy: they will learn about brazing and the importance of heating metal so that it is easily shaped. The pupil’s skills will be tested as they will be brazing different diameter bars, which is difficult to join effectively. The pupils will be working from a plan. This is important as it teaches them about working to a fixed specification and ensures they learn about accuracy as well as figuring out the sequence of the bends and joints. The pupils will be using the lathe for the first time. They will be facing off, slocombe drilling and then drilling their pieces. They will then tap and die their lathe pieces.</p> <p><u>Pewter casting:</u> This will introduce the pupils to the topics of casting metal and its distribution. This will be aimed at teaching the pupils how to create moulds to do so with pewter and also the advantages of this process in comparison to wasting of metal. The pupils will learn about the inversion of moulds and how to create a 3d profile using 2d layers.</p> <p><u>Board game:</u> This will introduce to the subject of papers and boards. The pupils will create a board game using the “race and chase” format. The aim of this project is to introduce the pupils to tessellation, nets , how to make cardboard foldable using hinges, creating a hinge and its ordering, modelling counters using foam and available materials and then creating a final prototype using CAD and CAM (3d printing).</p> <p><u>Crumble electronics:</u> This module covers the electronics syllabus in the KS4 curriculum. This module builds on their knowledge of electronics</p>	<ul style="list-style-type: none"> • Plastic dipping • Facing off • Centre drilling • Using a tap and die <p>Demonstrations on and including Health and safety and usage of PPE :</p> <ul style="list-style-type: none"> • Pewter casting using a pre-manufactured mould. • The design and manufacture of a mould. • Polishing of metals <p>Demonstrations on and including Health and safety and usage of PPE :</p> <ul style="list-style-type: none"> • Using a knife and other workshop tools to model foam • Creating a hinge in board • Using CAD and CAM; TinkerCad and the 3D printer. <p>Demonstrations on and including Health and safety and usage of PPE :</p> <ul style="list-style-type: none"> • Basic introduction to Crumble and its operating system. Simple circuit using a sparkles matrix • Intermediate demonstration on using timers, 2 sparkles and motors. • Advanced demonstration on using analog as well as digital inputs such as transistors, Ldrs, ultrasonic sensors and heat sensors. <p>Demonstrations on and including Health and safety and usage of PPE :</p> <ul style="list-style-type: none"> • Introduction of laminates; this includes how the moisture content affects the elasticity of wood. 	<ul style="list-style-type: none"> • Engagement in the lesson • End of module grading • Homework tasks <p>Engagement and ability to work with others effectively and develop.</p> <p>The pupils are assessed using the following mediums:</p> <ul style="list-style-type: none"> • Higher order questioning • Peer discussion • Self-assessment • Peer assessment • Practical outcomes • Quality of portfolio work (grading and marking based on attainment and effort) • Engagement in the lesson • End of module grading • Homework tasks <p>Engagement and ability to work with others effectively and develop.</p> <p>The pupils are assessed using the following mediums:</p> <ul style="list-style-type: none"> • Higher order questioning • Peer discussion • Self-assessment • Peer assessment • Practical outcomes • Quality of portfolio work (grading and marking based on attainment and



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	<p>learned in year 8 and teaches them using microcontrollers. This is important as it teaches them digital and analogue inputs. The pupils will be introduced to automated controls and how microcontrollers can be programmed to complete everyday tasks using various modes of inputs.</p> <p><u>Laminated lighting:</u> This module is based on woods and engineered or man-made woods. The pupils will create their own engineered laminate wood to create the stem of a lamp and will use aero plywood to create a shade or diffuser. The pupils will work to a broad specification and model their designs using the iterative design cycle to improve and amend their designs. The pupils will learn about jigs and formers as well as batch and one off production. This module will also teach the pupils about moisture and how it affects the elasticity of wood.</p>	<ul style="list-style-type: none"> • How to use aero plywood and how to create a rigid shape using it. • Electronics; how to solder a circuit using a pinboard. 	<p>effort)</p> <ul style="list-style-type: none"> • Engagement in the lesson • End of module grading • Homework tasks <p>Engagement and ability to work with others effectively and develop.</p> <p>The pupils are assessed using the following mediums:</p> <ul style="list-style-type: none"> • Higher order questioning • Peer discussion • Self-assessment • Peer assessment • Practical outcomes • Quality of portfolio work (grading and marking based on attainment and effort) • Engagement in the lesson • End of module grading • Homework tasks <p>Engagement and ability to work with others effectively and develop.</p> <p>The pupils are assessed using the following mediums:</p> <ul style="list-style-type: none"> • Higher order questioning • Peer discussion • Self-assessment



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			<ul style="list-style-type: none">• Peer assessment• Practical outcomes• Quality of portfolio work (grading and marking based on attainment and effort)• Engagement in the lesson• End of module grading• Homework tasks Engagement and ability to work with others effectively and develop.