

# Design & Technology Curriculum

## Intent

At Jotmans Hall, we intend our high quality Design & Technology curriculum to be fully inclusive to every child. Our aims are not just to fulfil the requirements of the National Curriculum for Design & Technology by providing a broad, balanced and differentiated curriculum but to inspire pupils to become the innovators of the future.

From an early age children learn to explore and investigate materials, tools and processes, investigate colour, texture, design, form and function and develop critical abilities, allowing them to make adaptations and solve problems.

We intend to stimulate children's curiosity about how things work and are made, the process of design and manufacture as well as how inventions and their inventors past and present have impacted on the future and our everyday lives. In our teaching, we intend to equip children with the knowledge of how Design and Technology elements work, how they are made and give them the skills to be able to create products themselves, make them unique and giving them the confidence to take those skills home to pursue them further.

In order to fully immerse the children in these projects, at Jotmans Hall we have chosen to spend a whole week on the projects for Design & Technology, bringing in Numeracy, Literacy and STEM subject skills as well as teamwork elements.

## Implementation

	Autumn	Spring	Summer
<b>EYFS ELG</b>	<b>Make junk models- 30-50 months</b> Children use available resources to create props in role play, uses various construction materials, Begins to construct , stacking blocks vertically and horizontally, making enclosures and creating spaces, realizes tools can be used for a purpose	<b>Make a sandwich-40-60 months</b> Children construct with purpose, uses a variety of resources, uses simple tools and techniques appropriately, selects and adapts where necessary, selects tools and techniques to shape, assemble and join materials	<b>Stick onto fabric, use threading cards-ELG –</b> Children use what they have learnt about media and materials in original ways, thinking about uses and purpose. They represent their own ideas and can talk about features in their own and others work, recognising differences and strengths.

		Autumn	Spring	Summer
<b>Year 1/2</b>	Year A	A Victorian tree decoration	Vehicle with axel	fruit kebabs/wraps
	Year B	Bedrooms /bridges	Moving pictures	Puppets

Year 1/2	What are we learning?	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
<b>Autumn – Year B</b>  <b>bedroom boxes for a toy</b>	What are bedrooms like? How do we draw a plan of a bedroom? What furniture do we need in a bedroom? How would do we decorate a bedroom? How can we attach cardboard and bend it to make shapes?	<b>birds eye view plans and maps, wallpaper, floor covering , rug, carpet, fabric, texture, pattern, mood, space, scale, join, attach, slit, hinge, bend, soft, smooth, rough,</b>	Know how to research to look at images of bedrooms in catalogues, magazines and internet  Know how to design plan of bedroom with key items of furniture using birds eye view mapping  Know names ,properties of materials and how they suit their purpose  Understand which tools to choose for the right job  Understand what to use to attach fabric, paper, card	Learn to design and allow for space and size of furniture for a specific toy  Learn how to make a list  Learn how to write/draw instructions in order, with numbers and imperative verbs  Learn how to score to bend and fold  Learn how to cut into and around card, paper and fabric  Learn how to choose make a pillow from cotton wool and fabric  Learn how to evaluate their project and describe what they like and don't like about it	Students will be assessed on the key skills in the National Curriculum through end of unit assessments. On-going formative assessment by class teacher
<b>Spring - Year B</b>  <b>Moving Pictures</b>	How do pictures move? Which directions can we move pictures in? <b>Which mechanisms create which kind of movement?</b> <b>How do we make structures stronger?</b>	split pin, circular, spiral, vertical, horizontal, pop up, flaps, lever, concertina, pivot	Know how to research and find out how things work by taking them apart  Explain how a split pin can make things attach and spin  Recognise that cardboard is thicker and therefore stronger than paper	<b>Learn how to create a concertina</b>  <b>Learn how to fold a flap</b>  <b>Learn how to use a split pin with a spinning image (including making a pilot hole and using a rubber to pierce through safely)</b>  <b>Learn how to create a lever</b>	Students will be assessed on the key skills in the National Curriculum through end of unit assessments. On-going formative assessment by class teacher

			<p>Understand that levers need a strap with space that allows movement</p> <p>Understand that moving parts bring pictures to life</p>	<p><b>Learn how to hide the working s behind an extra sheet of paper/card</b></p> <p><b>Use scissors, glue, tape with greater accuracy</b></p> <p><b>Evaluate how well the movement works</b></p>	
<p><b>Summer – Year B</b></p> <p><b>Puppets</b></p>	<p>How are puppets made?</p> <p><b>How many different kinds of puppet are there?</b></p> <p><b>How do puppets work?</b></p> <p><b>Who invented puppets?</b></p> <p><b>How have puppets changed?</b></p>	<p>puppeteer</p> <p><b>puppet</b></p> <p><b>theatre</b></p> <p><b>stick puppet</b></p> <p><b>hand puppet</b></p> <p><b>finger puppet</b></p> <p><b>shadow</b></p> <p><b>puppet</b></p> <p><b>marionette</b></p> <p><b>dowel</b></p> <p><b>polystyrene</b></p> <p><b>sew</b></p> <p><b>running stitch</b></p> <p><b>knot</b></p> <p><b>needle and thread</b></p> <p><b>attach</b></p> <p><b>features</b></p>	<p>Understand how puppets work</p> <p>Know how puppets help to tell a story</p> <p>Know that puppets have been used throughout history</p> <p>know that a puppeteer works a puppet</p>	<p>design a puppet to look like a character</p> <p>model and attach parts to a sock or stick puppet (depending on type)</p> <p>Add features by sewing on mouth (sock puppet) or fabric for top of body (stick puppet)</p> <p>Practice sewing a few stitches on a piece of Binca</p> <p>Thread a needle, tie a knot and sew a running stitch ,with support if needed</p> <p>Evaluate how much the puppet looks like the character</p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.</p> <p>On-going formative assessment by class teacher</p>
<p><b>Autumn – Year A</b></p> <p><b>Victorian tree decoration</b></p>	<p>What did Victorians decorate their trees with?</p> <p>What were the decorations made of?</p>	<p><b>wood,</b></p> <p><b>metal, clay,</b></p> <p><b>foil,</b></p> <p><b>playdough,</b></p> <p><b>wire, fabric,</b></p>	<p>Know that Victorians lived before living memory</p> <p>Know that Christmas real trees have bendy branches compared to artificial ones</p>	<p>Create a design from looking at existing decorations past and present</p> <p>Model and shape clay or other material</p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.</p> <p>On-going formative assessment by class teacher</p>

	<p>How heavy should tree decorations be? How were decorations coloured and finished? How do decorations hang?</p>	<p><b>biscuit, ribbon, string</b></p>	<p>Understand that clay, metal and wood decorations can be heavy</p> <p>Know that red , green and gold are Christmas colours</p> <p>Understand that some materials, like clay and playdough, dry out and become solid but are easy to model when soft.</p>	<p>Press into material to make patterns with tools</p> <p>Create a hole to allow for hanging</p> <p>Paint and finish the decoration with appropriate colours and using fair brush control and a small paintbrush.</p> <p>Evaluate by comparing their own and others</p>	
<p><b>Spring – Year A</b> <b>vehicles with moving axels</b></p>	<p>What difference did the invention of the motor car make to people’s lives? What makes cars move? How do axels work? What features do cars and vehicles have?</p>	<p><b>Travel, Transport, , bus, vehicle, train ,lorry , axel, wheel, motion, steer, join, fix, front , rear, lights, bumpers, windows, sunroof, boot, bonnet</b></p>	<p>Know that wheels are connected by axels</p> <p>Know that different vehicles require varying sets of wheels-e.g. lorries</p> <p>Know that wheels need to be fixed to the axel but the axel must be able to turn freely</p> <p>Identify other features of vehicles such as lights, windows and bumpers</p>	<p>Choose from a range, which books and magazines will help with ideas</p> <p>Design and label a diagram of a vehicle</p> <p>Choose an appropriate box/junk materials to make the shape</p> <p>Use a rubber and pencil to pierce holes for axels safely</p> <p>Realise that holes for axels need to be in the same place so need to be measured and marked</p> <p>Finish vehicle with paint, adding features such as shiny paper/film for windows, bumpers, wording , number plates etc</p> <p>Evaluate how well the vehicle moves, try out each other’s and listen to their opinions</p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.</p> <p>On-going formative assessment by class teacher</p>

<p><b>Summer – Year A</b></p> <p><b>fruit kebab/vegged up wrap</b></p>	<p>Why do we need to eat 5 a day?          What kinds of fruit and vegetables are there?          Where do fruit and vegetables come from?          What do unusual fruit and vegetables taste like?          When do different fruit and vegetables grow in our country?          How can we eat more fruit and vegetables?</p>	<p>imported, exported, root, stem, fruit, seed, tree, bush, leaf, season, seasonal, ripe over-ripe, under-ripe, ripen, sweet, sour, bitter, soft, firm, crunchy, juicy ,exotic, harvest, aroma, flavour, skin , peel, pith, edible</p>	<p>Identify fruits and vegetables grown in the UK</p> <p>Identify some exotic fruit/veg</p> <p>Understand how to describe taste as sweet, sour or bitter</p> <p>Know that some fruit and vegetables are grown in winter/summer/spring/autumn</p> <p>Recognise that for a healthy diet, we need to eat 5 fruit and vegetables each day</p> <p>Identify qualities of fruits such as smell, texture (crunchy, soft, juicy, firm)</p>	<p>Taste and describe a selection of fruit and vegetables</p> <p>Sort fruit and vegetables</p> <p>Classify fruit and vegetables from the UK and those from other countries</p> <p>Match fruit to their countries of origin          Sort vegetables into root, stem, leaf or flower</p> <p>Match some UK fruit and vegetables to their seasons</p> <p>Decide on fruit/vegetables to use in kebab or wrap, considering 5 a day and variety of colours.</p> <p>Evaluate the colour and taste of the kebab/wrap and well the flavours work</p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.          On-going formative assessment by class teacher</p>
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		Autumn	Spring	Summer
<b>Year 3/4</b>	Year A	Sewing coin purse /Christmas stocking		Cooking -Tudor cheese pies
	Year B	Circuit light up model		Pulley -Drawbridge/portcullis

Year 3/4	What are we learning?	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
Autumn – Year A  <b>Sewing -Coin purse/ Christmas stocking</b>	Which kinds of fabric are there? Which fabrics are manmade and which are natural? How do we create a simple shape? How do we use a template? How do we embroider?	<b>felt, felting, cotton, wool, leather, polyester, silk, thread, needle, embroider, running stitch, blanket stitch, knot, template, drawstring</b>	Know that some fabric is manmade and some are natural, find out about the manufacturing process of 1 fabric  Identify stitch types  Know that templates are used in the industry to make accurate shapes  Understand the need for a knot to stop the stitch from undoing and finishing off	Sort fabrics into manmade/natural  Thread a needle  Choose the appropriate size needle for the appropriate thread  Be able to join fabric with running or blanket stitch  Learn to embroider by sewing simple patterns into fabric  Be able to evaluate the effectiveness of their product as a stocking or drawstring purse and their ability to sew neatly	Students will be assessed on the key skills in the National Curriculum through end of unit assessments. On-going formative assessment by class teacher
Summer – Year A  <b>Tudor cheese pies</b>	What did the Tudors eat? How did the Tudors cook?	<b>5 a day, vegetables, seasonal, root, stem, leaf, flower, pastry, flour, fat, stove, temperature</b>	<b>Know that Tudors ate seasonal vegetables</b>  <b>Know that 5 a day increases health</b>	<b>Classify vegetables by season</b>	Students will be assessed on the key skills in the National Curriculum

	<p>What ingredients did the Tudors have available?  How is pastry made?  How can we make food more nutritious?</p>		<p><b>Know that food preparation involves safety and hygiene measures</b></p> <p><b>Know the limitations that Tudors would have had in ingredients choice and ways in which to cook food</b></p>	<p><b>Mold pastry to the correct shape</b></p> <p><b>Weigh and mix ingredients</b></p> <p><b>combine ingredients ,adding vegetables</b></p> <p><b>Evaluate taste , texture and how appetizing the finished product is</b></p>	<p>through end of unit assessments.  On-going formative assessment by class teacher</p>
<p><b>Autumn – Year B</b></p> <p><b>Model with a circuit</b></p>	<p>How does a circuit work?  How does electricity flow around a circuit?  Which elements does a circuit need?  How have inventors of the past/present used electricity?  How can an electric light source be used?</p>	<p>circuit, flow, electricity, power, energy,  <b>wattage, watts, volts, battery, positive/negative charge, wire, connection</b></p>	<p>Know that electricity flows around a circuit</p> <p>Know that electricity needs a positive and negative charge</p> <p>Know that metal conducts electricity and to break the connection is to create a switch</p> <p>Know that electricity is dangerous and electrical components should be hidden in household items</p>	<p>Learn to create a circuit from a power source, wires and a battery</p> <p>Learn to make a switch</p> <p>Learn to how to create a model from Modroc/paper mache /cardboard ,possibly needing a wire framework</p> <p>Paint and add attach details to finish the model</p> <p>Evaluate their effectiveness in design and quality of finish</p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.  On-going formative assessment by class teacher</p>
<p><b>Summer – Year B</b></p> <p><b>Lever drawbridge/ portcullis</b></p>	<p>Why did castles have drawbridges?  How do drawbridges work?  How do gears work?  How do pulleys work?  How does weight affect pulleys?</p>	<p><b>drawbridge, pulley, cogs, gears, lever, rotate, vertical, horizontal, diagonal, motion, reinforcing</b></p>	<p><b>Know that a lifting motion is created by a pulley</b></p> <p><b>Know that weight and tension is needed to pull a structure up</b></p> <p><b>Know that a pulley action needs a cog</b></p> <p><b>Know that the strength of string/rope etc will be</b></p>	<p><b>Learn how to create a pulley</b></p> <p><b>Learn how to test out elements of the design</b></p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.  On-going formative assessment by class teacher</p>

			subject to the weight of structure	construct structures from card by bending/joining/reinforcing  Create a gear system  Evaluate how well the model moves and how strong the structure is	
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		Autumn	Spring	Summer
<b>Year 5 / 6</b>	Year A	CAM toys		Cooking -bread
	Year B	Marble Run		Sewing- Phone pouch

Year 5 / 6	What are we learning?	Vocabulary	What knowledge and understanding will we gain?	What key skills will we learn?	How will these be assessed?
<b>Autumn – Year A</b>  <b>Cam movement long boat</b>	How does a CAM work? What kinds of CAM are there and how do they affect movement? How can we use a CAM to make a long boat move What does a long boat look like? How do we cut and join wood?	CAM, eccentric, follower, axel, rod, dowel, saw, joint, handle, motion, linear, rotary, mechanism	Know what a CAM is  <b>Know how CAMs create movement</b>  <b>Know how to handle tools safely including hot glue guns and saws</b>  <b>Know that long boats were used in Anglo-Saxon times</b>  <b>Know how CAM systems are used in modern day devices</b>	Learn to research mechanisms  Learn how to test out CAM systems  <b>Measure lengths and widths accurately</b>  <b>Learn how to saw wood , create miter joints and use a hot glue gun</b>	Students will be assessed on the key skills in the National Curriculum through end of unit assessments. On-going formative assessment by class teacher



				<p><b>Learn to create long boat shape with card by modelling and shaping with junk/masking tape</b></p> <p><b>Evaluate the smooth working of the CAM system and the relative movement of the boat</b></p>	
<p><b>Summer – Year A</b></p> <p><b>Bread</b></p>	<p>How is bread made?          What are the main ingredients in bread?          How did the Mayans make bread?          What is the rising process?          What does yeast do to bread?          What flavours work well with bread?</p>	<p><b>rise, knead, dough, prove, action, yeast, ferment, sweet, savoury, process,</b></p>	<p><b>Know there are many varieties of bread</b></p> <p><b>Understand that the Mayan diet consisted mainly of fruit, vegetables and grains</b></p> <p><b>Know that there are sweet breads and savoury breads</b></p> <p><b>Know that bread uses yeast to create air bubbles through the process of fermentation</b></p> <p><b>Know that some breads do not use yeast</b></p>	<p><b>Taste varieties of bread</b></p> <p><b>Describe textures and flavours</b></p> <p><b>Taste from a suggested range of ingredients to add texture and flavor to the bread</b></p> <p><b>Measure ingredients accurately</b></p> <p><b>Learn how to knead bread</b></p> <p><b>Learn how to prove bread</b></p> <p><b>Learn how to grease, cut paper and line a tin</b></p> <p><b>Evaluate flavour, texture , density of bread and amounts of ingredients used in 'bake'</b></p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.          On-going formative assessment by class teacher</p>

<p><b>Autumn – Year B</b></p> <p><b>Marble Run</b></p>	<p>How would criminals spend their time in prison?  How could simple items be used to create toys and be a distraction?  How do marble runs work?  What variety of components can be used in a marble run to vary the movement?</p>	<p>object, motion, force, gravity, spin, friction, centrifugal, spiral, spinning wheel, cylindrical, chute,</p>	<p>Know that gravity causes round objects to travel faster down gradients</p> <p>Understand that a round funnel type arrangement is subject to a centrifugal force , spinning it around towards the hole</p> <p>Understand how curves slow down movement</p>	<p><b>Research different components of marble runs</b></p> <p><b>Design marble run as part of a team, taking at least one component each</b></p> <p><b>Communicate with team on decisions and how parts work together</b></p> <p><b>Support structures and learn how to cut and create bends</b></p> <p><b>Discuss issues and problem solve</b></p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.  On-going formative assessment by class teacher</p>
<p><b>Summer – Year B</b></p> <p><b>Phone pouch</b></p>	<p>How did the Greeks communicate?  Who invented the telephone?  How have phones changed?  How are phones protected by cases?  What do people look for in phone cases?  What is the best feature of a phone case?  What will specific age ranges want to see on a phone pouch?</p>	<p><b>felt, cotton, fabric, fibers- manmade, artificial, synthetic , natural-,animal, plant, embroidery, applique, seam, flap, strap, running stitch, over stitch, back stitch, blanket stitch, hem, thread, needle, template, target market, generic</b></p>	<p><b>Know that phone cases need to match phone sizes which are not generic</b></p> <p><b>Know that Alexander Graham Bell invented the telephone ,patented in 1876</b></p> <p><b>Know types of fabric and whether they are natural or man-made and their origin</b></p> <p><b>know how to use questionnaires, surveys and data to tell us about target markets</b></p>	<p><b>Measure phones to create template and allow for differences in size, seam and some movement</b></p> <p><b>Research designs and popular logos and themes for target market</b></p> <p><b>Make designs with exploded areas for detail</b></p> <p><b>Sew accurately with chosen stitch</b></p> <p><b>Choose and create a fastening</b></p>	<p>Students will be assessed on the key skills in the National Curriculum through end of unit assessments.  On-going formative assessment by class teacher</p>

				<p><b>Add detail by using embroidery, applique or stick on with fabric glue</b></p> <p><b>Evaluate ease of use, overall appearance and aesthetics. Survey responses of target market and suggest alterations for greater success</b></p>	
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## Impact

Assessments are made in order to improve. They are used to identify where there are gaps in learning for particular pupils. Planning is adjusted as a result in order to ensure that identified pupils catch up or close the gap.

All pupils are individual and will be assessed in this way to ensure that they fulfil their individual potential. The founding assumption is that all pupils can achieve mastery (breadth and depth) if they are supported to do so.

Pupils' progress is continually monitored throughout their time at the school and is used to inform future learning and teaching. Teaching staff will assess the children's knowledge at the end of each unit by asking the Key Questions identifies on the Knowledge Organisers.

End points are set by the National Curriculum. By the end of each key stage, pupils are expected to know, apply and understand the knowledge, skills and competencies as specified in the programme of study.

Assessment for learning is continuous throughout the planning, teaching and learning cycle.