



Design and Technology

Key Stage 4 Framework for Learning

Year 9 2017-2018: Happy Foundations

Syllabus:

AQA GCSE Design & Technology
 Specification Title 8552
 50% controlled assessment
 50% examination

Autumn 1

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| <p>Knowledge</p> | <p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> • Technical principles • Designing and making principles <p>Students will also be taught the design principles within year 9 to enable them to develop skills in technical drawing as well as creative and innovative design principles Students will need to know how to:</p> <ul style="list-style-type: none"> • use different design strategies, such as collaboration, user-centred design and systems thinking, to generate initial ideas and avoid design fixation • develop, communicate, record and justify design ideas, applying suitable techniques, for example: • formal and informal 2D and 3D drawing; • system and schematic diagrams; • annotated sketches; • exploded diagrams; • models; • presentations; • written notes; • working drawings; • schedules; • audio and visual recordings; • mathematical modelling; • Computer-based tools. |
| <p>Skills</p> | <p>Students will need to apply the technical knowledge for the topic being studied into practical skills which are taught through the medium of the topic of design skills.</p> <p>Students will learn practical skills and application for working with drawing skills which can include:</p> <ul style="list-style-type: none"> • Sketch drawing techniques and methods; this will include exploring methods and techniques for creative sketching and originality. • Orthographic drawing and projection methods. • Isometric drawing and projection methods. • One point and two point perspective drawing methods. • Techniques commonly used to shade and render materials and drawings. • Techniques to visually present information and drawings to communicate with clients. |
| <p>Assessment</p> | <p>Work produced by students will be marked on a regular basis in accordance with the school policy.</p> <p>As well as the key assessed pieces outlined below, opportunities for self and peer assessment will help provide feedback to students in Design and Technology.</p> <p><i>Work will be graded using a numerical performance indicator from 0-9, and progress will reflect on how their performance is in line with expectations.</i></p> <p>Three pieces of work will be assessed during the term. These will be on:</p> <p>A piece of classwork: Orthographic Projection methods. (Design activity)</p> <p>A piece of classwork: Two Point perspective drawing methods. (Design activity)</p> <p>A piece of classwork:</p> |



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| | Presentation and communication of information techniques. (combination of assessment question and design activity) |
| Cultural enrichment | <p>Enrichment: Look at the work of designer and local design companies to show the impact of designs upon the development of products and spaces in the local area – Manchester. This could relate to the architectural plans developed for city regeneration programs or the use of local themes in the design of products – Bee symbol used on bins around the city. This could form part of a design task for all students to access, and ideally with an educational visit to look at some of these in practice in the city center.</p> |
| Character | <p>Q of S Optimism</p>  <p>Optimism: Students will be encouraged to reflect on their progress throughout each term and establish targets for development.</p> |
| Autumn 2 | |
| Knowledge | <p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> • Technical principles • Designing and making principles <p>During this half term students will focus on the material type of Natural and manufactured timber. In relation to this material type students' knowledge will center around:</p> <ul style="list-style-type: none"> • The sources, origins, physical and working properties of the material categories and their ecological and social footprint. • The way in which the selection of materials or components is influenced by a range of factors, such as functional, aesthetic, environmental, availability, cost, social, cultural and ethical. • The impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened. <p>Stock forms, types and sizes in order to calculate and determine the quantity of materials or components required.</p> |
| Skills | <p>Students will need to apply the technical knowledge for the topic being studied into practical skills which are taught through the medium of the material specialism (Natural and manufactured timber) Students will learn practical skills and application for working with timber which can include:</p> <ul style="list-style-type: none"> • Cutting and shaping tools, tenon saws, coping saws and mechanical equipment/saws. • Traditional fixtures, and joining methods for working with timber based materials, which includes the use of glues/adhesives, mechanical fixing, carpentry and joinery methods etc. • Traditional methods of finishing the material being studied which might include the use of glass paper, files and rasps as well as mechanical equipment in a workshop environment. • Traditional methods of applied finishing the material being studied which might include the use of wax, stains, paints, varnish, solvents, oils or primers. • |
| Assessment | <p>Work produced by students will be marked on a regular basis in accordance with the school policy. As well as the key assessed pieces outlined below, opportunities for self and peer assessment will help provide feedback to students in Design and Technology.</p> <p><i>Work will be graded using a numerical performance indicator from 0-9, and progress will reflect on how their performance is in line with expectations.</i></p> <p>Three pieces of work will be assessed during the term. These will be on:</p> <p>A piece of classwork: Students will produce a piece of work on material types and their properties specific to topic. (Investigation and exam question practice)</p> <p>A Home learning task: Students will complete a practice exam question based on the topic of wooden materials and their environmental impact.</p> <p>Progress test: At a time decided by the management of the school, students will undertake a formal examination on the topics covered during Autumn term 1 and Autumn term 2. This will be in the form of a written paper set in the style that will be undertaken at the end of the course (Year 11).</p> |
| Cultural enrichment | Enrichment: |



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| | <p>Look into the work of sustainable groups who develop the methods they use to help become more sustainable in causes such as deforestation. This could also include investigations into charities such as the FSC (forestry stewardship council) and their drive to create sustainable sources of wooden materials, or the natural trust who are working to preserve local environments. This can be a hook and connect activity or starter activity to look at the impact of this group.</p> |
| <p>Character</p> | <p>Q of S Empathy</p>  <p>Empathy: When working with materials and considering material and product life cycles there are strands of the curriculum which require students to consider the social moral, cultural, ethical and environmental issued which relate to the use of wood and timbre in the manufacture of product.</p> |
| <h2>Spring 1</h2> | |
| <p>Knowledge</p> | <p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> • Technical principles • Designing and making principles <p>During this half term students will focus on the material type of ferrous and non-ferrous metals. In relation to this material type students' knowledge will center around:</p> <ul style="list-style-type: none"> • The sources, origins, physical and working properties of the material categories and their ecological and social footprint. • The way in which the selection of materials or components is influenced by a range of factors, such as functional, aesthetic, environmental, availability, cost, social, cultural and ethical. • The impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened <p>Stock forms, types and sizes in order to calculate and determine the quantity of materials or components required.</p> |
| <p>Skills</p> | <p>Students will need to apply the technical knowledge for the topic being studied into practical skills which are taught through the medium of the material specialism ferrous and non-ferrous metals. Students will learn practical skills and application for working with timber which can include:</p> <ul style="list-style-type: none"> • Cutting and shaping tools, hacksaws, junior hacksaws and mechanical equipment/saws. • Traditional fixtures, and joining methods for working with metal based materials, which includes the use of glues/adhesives, mechanical fixing (rivets/nut and bolts), welding, soldering and casting. • Traditional methods of finishing the material being studied which might include the use or emery cloth, files and rasps as well as mechanical equipment in a workshop environment. • Traditional methods of applied finishing the material being studied which might include the use or primers, oxide paints, solvent paints, oil bluing, dip coating etc. |
| <p>Assessment</p> | <p>Work produced by students will be marked on a regular basis in accordance with the school policy. As well as the key assessed pieces outlined below, opportunities for self and peer assessment will help provide feedback to students in Design and Technology.</p> <p><i>Work will be graded using a numerical performance indicator from 0-9, and progress will reflect on how their performance is in line with expectations.</i></p> <p>Three pieces of work will be assessed during the term. These will be on:</p> <p>A piece of classwork: Students will produce a piece of work on material types and their properties specific to topic. (Investigation and exam question practice)</p> <p>A piece of classwork: Students will complete a practical sampling activity – Metal (Practical assessment)</p> <p>A Home learning task: Students will complete a practice exam question based on the topic of metal materials and their environmental impact.</p> |
| <p>Cultural enrichment</p> | <p>Enrichment: Investigation into steel mills in the UK and how these are being closed down as manufacturing is moved overseas. Students to explore how this impacts local employment and economic downfalls in areas. Students to watch video news articles and newspaper articles to assess the impact of the mill closures in local areas.</p> |
| <p>Character</p> | <p>Q of S</p> |



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| | <p>Creativity & Curiosity</p> <div style="display: flex; align-items: center; gap: 10px;">   </div> <p>Creativity: In Design and Technology creativity is encouraged through the use of design. Design tasks are set regularly to help not only strengthen design skill and ability but to also enhance creative thinking and problem solving in relation to a variety of materials and tasks.</p> <p>Curiosity: During the course of lessons this term, it is envisaged that students will demonstrate curiosity about the number of new materials that they will be learning about.</p> |
| <h2>Spring 2</h2> | |
| <p>Knowledge</p> | <p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> • Technical principles • Designing and making principles <p>During this half term students will focus on the material type of natural, synthetic, blended and mixed fibers, and woven, non-woven and knitted textiles.</p> <p>In relation to this material type students' knowledge will center around:</p> <ul style="list-style-type: none"> • The sources, origins, physical and working properties of the material categories and their ecological and social footprint. • The way in which the selection of materials or components is influenced by a range of factors, such as functional, aesthetic, environmental, availability, cost, social, cultural and ethical. • The impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened. • Stock forms, types and sizes in order to calculate and determine the quantity of materials or components required. |
| <p>Skills</p> | <p>Students will need to apply the technical knowledge for the topic being studied into practical skills which are taught through the medium of the material specialism natural, synthetic, blended and mixed fibers, and woven, non-woven and knitted textiles. Students will learn practical skills and application for working with textiles which can include:</p> <ul style="list-style-type: none"> • Cutting and shaping tools, pins, needles, shears, pinking shears, sewing machines etc. • Traditional fixtures, and joining methods for working with textile based materials, which includes the use of zips, buttons, stitching etc. • Traditional methods of decorating the material being studied which might include the use of embroidery, applique, quilting, beading, patchwork, pleating, gathering, darts, heat setting etc. • Traditional methods of applied finishing the material being studied which might include the use of dyeing, printing, transfer printing, digital printing, etc. • Traditional methods of finishing the material being studied which might include the use of brushing, embossing, calendaring, pressing, shrinkage, water repellent, stain, crease, flame and shrink resistance. |
| <p>Assessment</p> | <p>Work produced by students will be marked on a regular basis in accordance with the school policy. As well as the key assessed pieces outlined below, opportunities for self and peer assessment will help provide feedback to students in Design and Technology.</p> <p><i>Work will be graded using a numerical performance indicator from 0-9, and progress will reflect on how their performance is in line with expectations.</i></p> <p>Three pieces of work will be assessed during the term. These will be on:</p> <p>A piece of classwork: Students will produce a piece of work on material types and their properties specific to topic. (Investigation and exam question practice)</p> <p>A Home learning task: Students will complete a practice exam question based on the topic of fibres and textiles, and their environmental impact.</p> <p>Progress test: At a time decided by the management of the school, students will undertake a formal examination on the topics covered during Autumn term 1 and Autumn term 2. This will be in the form of a written paper set in the style that will be undertaken at the end of the course (Year 11).</p> |
| <p>Cultural enrichment</p> | <p>Enrichment: Investigate the use of fair trade materials and cotton trading to explore the impact of fabric materials on developing countries and farmers in other nations. This could be developed further into research linking to the topic of mass produced items in factories where low wages are paid. Students could do a comparison test on fair trade products for factors including price, taste, quality etc as part of an investigation in lesson.</p> |
| <p>Character</p> | <p>Q of S</p> |



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| | <p>Responsibility & Reflection</p> <div style="display: flex; justify-content: space-around;">   </div> <p>Responsibility: Students Responsibility will be encouraged through the development of this academic year as they embark on their chosen GCSE course, expectations and standards will be fundamental ensuring their success in this qualification.</p> <p>Reflection: Students will be encouraged to reflect on their progress throughout each term and establish targets for development.</p> |
| <h2>Summer 1</h2> | |
| <p>Knowledge</p> | <p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> • Technical principles • Designing and making principles <p>During this half term students will focus on the material type of thermoforming and thermosetting polymers. In relation to this material type students' knowledge will center around:</p> <ul style="list-style-type: none"> • The sources, origins, physical and working properties of the material categories and their ecological and social footprint. • The way in which the selection of materials or components is influenced by a range of factors, such as functional, aesthetic, environmental, availability, cost, social, cultural and ethical. • The impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened. • Stock forms, types and sizes in order to calculate and determine the quantity of materials or components required. |
| <p>Skills</p> | <p>Students will need to apply the technical knowledge for the topic being studied into practical skills which are taught through the medium of the material specialism thermoforming and thermosetting polymers. Students will learn practical skills and application for working with plastic which can include:</p> <ul style="list-style-type: none"> • Cutting and shaping tools, such as coping saws and mechanical equipment/saws. • traditional fixtures, and joining methods for working with plastic based materials, which includes the use of glues/adhesives, mechanical fixing, and using heat treatments to shape and form plastics/polymers. • Traditional methods of finishing the material being studied which might include the use of emery cloth, wet and dry paper, and files as well as mechanical equipment (polishing wheels) in a workshop environment. • Traditional methods of applied finishing the material being studied which or decorative finishes which can be applied to polymer materials. |
| <p>Assessment</p> | <p>Work produced by students will be marked on a regular basis in accordance with the school policy. As well as the key assessed pieces outlined below, opportunities for self and peer assessment will help provide feedback to students in Design and Technology.</p> <p><i>Work will be graded using a numerical performance indicator from 0-9, and progress will reflect on how their performance is in line with expectations.</i></p> <p>Three pieces of work will be assessed during the term. These will be on:</p> <p>A piece of classwork: Students will produce a piece of work on material types and their properties specific to topic. (Investigation and exam question practice)</p> <p>A piece of classwork: Students will complete a practical sampling activity – Wood (Practical assessment)</p> <p>A Home learning task: Students will complete a practice exam question based on the topic of plastic materials and their environmental impact.</p> |
| <p>Cultural enrichment</p> | <p>Enrichment: Investigate areas of the world where oil is extracted from and its impact on the local economy and environment. This could link to natural disasters which have taken place, or areas which have flourished as results of oil trades. For example a comparative investigation into the gulf of Mexico disaster compared to areas in the middle east which trade oil. Students to watch video news articles and newspaper articles to assess the impact of the oil spills on local environment and nature.</p> |
| <p>Character</p> | <p>Q of S Resiliency & Practice</p> <div style="display: flex; justify-content: space-around;">   </div> <p>Resiliency: As students move into their next materials topics there will be ad drive on improving and developing their understanding of key topics and investigation techniques from Autumn2, students will develop resiliency through acting on feedback to enhance their performance in research, design and practical assessed pieces of work.</p> |



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| | <p>Practice: Like most topics being covered throughout the academic year in relation to materials students will undertake a range of sampling and practice practical tasks in relation to this material specialism, this could include the use of sample joining methods, finishes etc.</p> |
| <h2>Summer 2</h2> | |
| Knowledge | <p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> • Technical principles • Designing and making principles <p>During this half term students will focus on the material type of papers and boards. In relation to this material type students' knowledge will center around:</p> <ul style="list-style-type: none"> • The sources, origins, physical and working properties of the material categories and their ecological and social footprint. • The way in which the selection of materials or components is influenced by a range of factors, such as functional, aesthetic, environmental, availability, cost, social, cultural and ethical. • The impact of forces and stresses on materials and objects and the ways in which materials can be reinforced and stiffened. Stock forms, types and sizes in order to calculate and determine the quantity of materials or components required. |
| Skills | <p>Students will need to apply the technical knowledge for the topic being studied into practical skills which are taught through the medium of the material specialism papers and boards. Students will learn practical skills and application for working with paper and board which can include:</p> <ul style="list-style-type: none"> • Cutting and shaping tools, shears, scissors, guillotines as well as mechanical equipment such as die cutters. • Traditional fixtures, and joining methods for working with paper and boards, which includes the use of glues/adhesives, tapes and standard components, mechanical fixing, scoring, folding, bending techniques. • Traditional methods of finishing and applied finished to the material being studied which might include the use of laminating, varnishing, embossing, foil blocking, printing, painting, dyes etc. |
| Assessment | <p>Work produced by students will be marked on a regular basis in accordance with the school policy. As well as the key assessed pieces outlined below, opportunities for self and peer assessment will help provide feedback to students in Design and Technology.</p> <p><i>Work will be graded using a numerical performance indicator from 0-9, and progress will reflect on how their performance is in line with expectations.</i></p> <p>Three pieces of work will be assessed during the term. These will be on:</p> <p>A piece of classwork: Students will produce a piece of work on material types and their properties specific to topic. (Investigation and exam question practice)</p> <p>A Home Learning task: Students will complete a practice exam question based on the topic of papers and boards and their environmental impact.</p> <p>Progress test: At a time decided by the management of the school, students will undertake a formal examination on the topics covered during Autumn term 1 and Autumn term 2. This will be in the form of a written paper set in the style that will be undertaken at the end of the course (Year 11).</p> |
| Cultural enrichment | <p>Enrichment: Make use of the schools marketing company to investigate the ways in which paper and board based materials are converted into the products we use in school for marketing and resources for students. This could also include a visit to a printing company to investigate the ways papers and boards are finished to create products. Liaise with C. Taggart to see if the marketing systems in school can be explored by students and if we can get a guest speaker to work with students in lessons.</p> |
| Character | <p>Q of S - Motivation</p> <div style="text-align: center;">  </div> <p>Motivation: Like most topics being covered throughout the academic year in relation to materials students will undertake a range of sampling and practice practical tasks in relation to this material specialism, this could include the use of sample joining methods, finishes etc.</p> |

