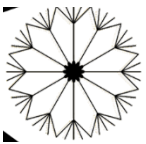


Year 9 Curriculum Content Overview 2018-19

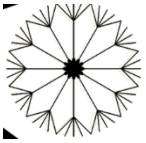
Design & Technology (AQA)				
Knowledge and Skills Students will be taught to....	Reading, Oracy, Literacy and Numeracy	Formative Assessment	Summative Assessment	Link to reformed GCSE Content
<ul style="list-style-type: none"> ● Apply and develop further learned skills (including those from the development stage) to work safely within the workshop and textiles room. ● Apply and develop further learned skills (including those from the development stage) to work safely when using equipment and machinery in the workshop and textiles room. ● Select the appropriate tools/equipment that is needed to manufacture a product, or produce a food product. apply learned skills to accurately and safely manufacture a range of products in a number of different material areas. ● Apply learned skills to be able to interpret their designs or designs of others to manufacture a product. ● Describe/explain decisions they make on selection of materials. ● Describe/explain how new and emerging technologies may affect the design and manufacture of new/existing products. ● Identify/describe/explain the different properties that material possess and how these can be adapted to improve the functionality of a material/product. 	<p>Reading</p> <ul style="list-style-type: none"> ● Interpreting instructions for manufacturing products. ● Interpreting designs/technical drawings to manufacture products. ● Gather information from notes to support in technical knowledge. 	<p>Questioning in lessons.</p> <p>Verbal feedback during lessons on practical work.</p> <p>Low stakes quizzing.</p> <p>Exit strategies.</p>	<p>3 assessments throughout the academic year</p> <p>Each practical project will be assessed, where students will receive teacher feedback.</p>	<p>Practical and designing skills needed for the NEA.</p> <p>Unit 3 - Materials and their working properties.</p> <p>Unit 1 - New and emerging technologies</p> <p>Unit 4 - Common specialist technical principles.</p>
	<p>Numeracy</p> <ul style="list-style-type: none"> ● Measurements (mm). ● Conversion of units ● Areas of shapes. ● Tessellation ● Calculating waste 			
	<p>Oracy and Literacy (including keywords for practical subjects)</p> <ul style="list-style-type: none"> ● Key words ● Student discussion ● Student demonstrations 			



Assessment Skills, Knowledge and Concepts Map

(These need to be mapped backwards from GCSE and ensure that all students can access their target percentage) – what do all students need to achieve in year 7 to be able access their target grade and be on track for their year 11 target grade?

	Design & Technology (AQA) - Year 9	Cross-Curricular Strands
Key Learning Questions	Practical Skills	Reading
<ul style="list-style-type: none"> Why are certain tools used for certain jobs? What is the importance of quality control? Why do products need to be made within tolerance? What must you do to modify your work as you are manufacturing (consolidation as you work)? 	<ul style="list-style-type: none"> Apply learned skills to use the correct tools, materials and equipment to manufacture a product. Explain why a particular tool has been chosen to complete the task. Describe the term quality control and why it is important when manufacturing products. Explain and show in their own work, how quality control checks have been applied. Explain why working within tolerance is key to manufacturing products. Describe some of the strengths of another person's practical work. Describe and show how they could improve their work by using the correct tools and equipment. Analyse their own work as they are manufacturing a product and make modifications to it when necessary. 	<ul style="list-style-type: none"> Reading of written instructions. Reading and interpreting technical specifications. Reading and interpreting working drawings.
Key Learning Questions	Unit 3 - Materials and their working properties	Oracy and Literacy
<ul style="list-style-type: none"> What are the primary sources of materials for producing papers and boards, natural and manufactured timbers, metals and alloys, polymers and textiles? What are the characteristics of different types of papers and boards, natural and manufactured timbers, metals and alloys, polymers and textiles? How do physical and working properties of a range of paper and board, natural and manufactured timber, metal and alloy, polymer and 	<ul style="list-style-type: none"> Identify the sources of where materials come from. Describe how the primary resources are converted into the materials we use, Explain the process of how primary sources are converted into the materials we use. Evaluate the effect that these process have on the environment. Identify the characteristics of different materials under each of the material headings (papers & boards, natural & manufactured timbers, metals & alloys, polymers and textiles). Describe/Explain how the characteristics affect how the material is used. Identify the different physical properties that materials may possess. Identify the different working properties that materials may possess. 	<p>Language for Learning Automation, client, commercial process, commercial product, co-operative, crowdfunding, ecological, functionality, technology push, market pull, lean manufacturing, primary source (of materials), physical properties, working properties, planned obsolescence</p> <p>Key terms Working properties, physical properties, absorbency, density, fusibility, electrical conductivity, thermal conductivity, strength, hardness, toughness, malleability, ductility,</p>



<p>textile products affect their performance?</p>	<ul style="list-style-type: none"> ● Describe how physical and working properties may affect the performance of a material when used in a product. ● Explain how physical and working properties affect their suitability for products (give examples).
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elasticity, softwood, hardwood, thermosetting, thermoforming, ferrous, non-ferrous, natural fibres, synthetic fibres, mixed/blended fibres, woven fabrics, non-woven fabrics, industry, enterprise, automation, crowdfunding, virtual marketing/retail, fairtrade, sustainability, finite/non-finite resources, Life Cycle Assessment, environment, consumer choice, technology push, market pull, fashion and trends, CAD, CAM, FMS, JIT, lean manufacturing, planned obsolescence,

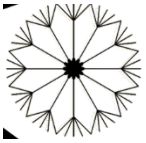
Oracy
 Student discussion and student feedback.
 Student response to questions.
 Student to student discussion on evaluation of products.
 Class discussion on topics being taught.

<p>Key Learning Questions</p>	<p>Unit 1 - New and emerging technologies</p>
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<ul style="list-style-type: none"> ● How have new and emerging technologies changed the way we live and how they continue to shape the modern world? ● Why is responsible design and manufacturing key to the protection of the environment? ● How has technology push and market pull affected consumer choice and employment? ● Why do changes in fashion and trends affect designers and manufacturers? ● How do production techniques and systems have an impact on manufacturing? 	<ul style="list-style-type: none"> ● Describe the ways in which new and emerging technologies have changed the way we live. ● Explain how computers and automation have impacted the design and organisation of a workplace through the use of robotics. ● Explain how innovation has driven product development. ● Identify the difference between finite and non-finite resources and be aware of the impact that resources consumption has on the planet. ● Describe the stages of a Life Cycle Assessment. ● Explain how life cycle assessments assist in responsible design and manufacture of products. ● Describe the ways in which technologies can have a positive and negative impact on new products and the impact this has on the environment. ● Explain the terms technology push and market pull, and the impact this has on consumer choice.
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<p>Numeracy</p>

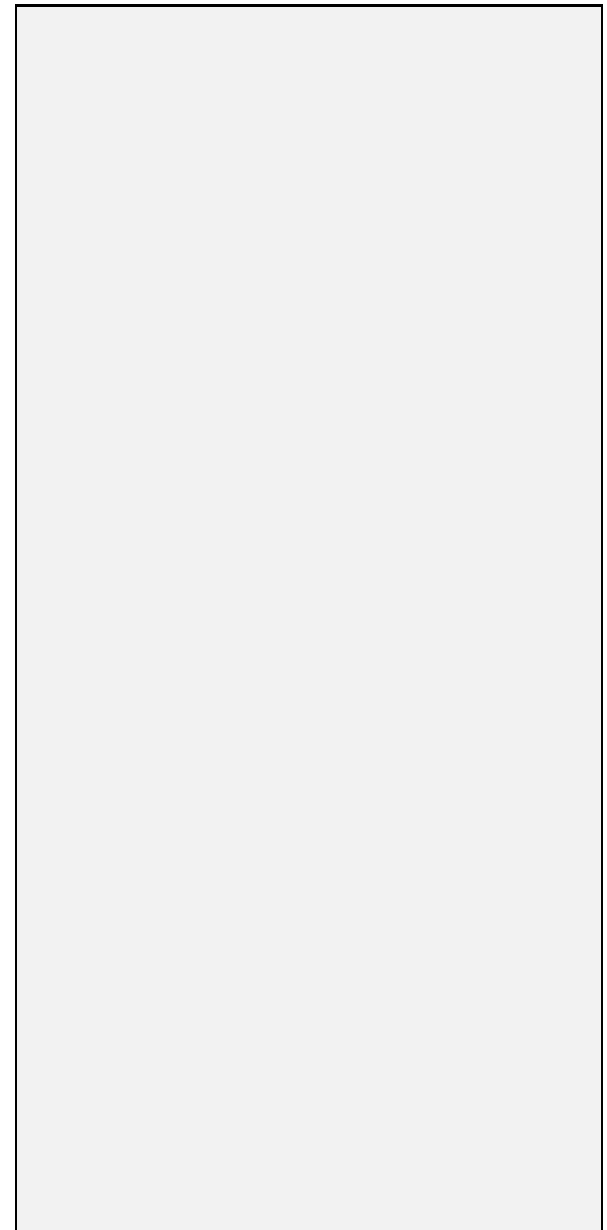
- Measuring and marking out materials accurately, using the correct equipment.
- Working in mm.
- Areas of shapes
- Tessellation
- Calculating waste material

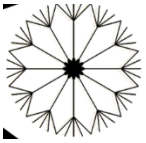


<ul style="list-style-type: none"> ● Why are planned obsolescence, designing to be repaired/recycled and ethical and environmental concerns information on design decisions? 	<ul style="list-style-type: none"> ● Explain how cultural (fashion and trends, faith and beliefs) changes affect designers and manufacturers. ● Describe how new products have a positive and negative impact on society. ● Identify what is meant by the abbreviations CAD, CAM, CNC, FMS, JIT. ● Describe what CAD, CAM, CNC, FMS, JIT and lean manufacturing mean. ● Explain the advantages and disadvantages of CAD/CAM and the impact on manufacturing. ● Explain how JIT (just in time manufacturing) and Lean Manufacturing contribute to manufacturing efficiencies. ● Describe the term planned obsolescence. ● Evaluate the advantages and disadvantages of planned obsolescence from different perspectives. ● Identify how products can be designed to be repaired and recycled. ● Discuss the ethical and environmental concerns when designing with new technologies.
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Key Learning Questions	Unit 4 - Common specialist technical principles
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<ul style="list-style-type: none"> ● What are the characteristics of tension, compression, bending, torsion and shear forces and stresses? ● What impact do different forces and stresses have on materials? ● How can materials be enhanced to resist and work with forces and stresses to help improve functionality? ● How does a consumer society have an impact on natural resources and the environment? ● Why do we as a society and government need to take responsibility to address safe working conditions and pollution? 	<ul style="list-style-type: none"> ● Identify and characterise the different forces and stresses on a material. ● Describe/Explain the impact of the different forces and stresses on materials. ● Identify the ways in which materials can be enhanced to resist and work with forces and stresses to improve functionality. ● Explain how materials can be enhanced to resist and work with forces and stresses to improve functionality. ● Identify how greenhouse gases and carbon are produced during the manufacture of products. ● Be aware of the need for social and governmental responsibility to address safe working conditions and pollution. ● Explain the impact that a consumer society has on natural resources and environment, this includes deforestation, mining, drilling, farming and product miles. ● Identify the 6Rs that aid designers and manufactures to be responsible when design/making a product.
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- Why is it important that consumers play a key role in reducing waste and the demand on finite resources?
- When and why are different manufacturing methods used for different production volumes?

- Describe each of the 6Rs and how they can be used to ensure a product is as sustainable as it can be.
- Identify the different scales of production.
- Describe each of the scales of production.
- Explain when and why different manufacturing methods are used in different production volumes.

