



# Computing and Technology

## Key Stage 4 Framework for Learning

### Year 10 2017-2018: Successful Foundations

**Syllabus:**

AQA GCSE Design and Technology  
Specification Title 8552

## Autumn 1

**Knowledge**

The knowledge, understanding and skills that all students must develop are separated into:

- Core Technical principles
- Specialist Technical principles
- Designing and making principles

During this half term students will focus on new and emerging technologies.

In relation to this students' will complete project based tasks and knowledge will center around:

- Industry and Enterprise
- Sustainability
- People, Culture and Society
- Environment
- Production techniques and systems
- How the critical evaluation of new and emerging technologies informs design decisions
- Design strategies
- Communication of design ideas


**Skills**

Students will need to apply the core and specialist technical principles and design and making principles for the topics being studied.


Students will learn practical skills and application for working with drawing skills and materials which can include:

- The impact of new and emerging technologies on:
  - the design and organisation of the workplace including automation and the use of robotics
  - buildings and the place of work
  - tools and equipment.
- Enterprise based on the development of an effective business innovation:
  - crowd funding
  - virtual marketing and retail
  - co-operatives
  - fair trade.
- The impact of resource consumption on the planet:
  - finite
  - non-finite
  - disposal of waste.
- How technology push/market pull affects choice.
- Changes in fashion and trends in relation to new and emergent technologies.
- Respecting people of different faiths and beliefs.
- How products are designed and made to avoid having a negative impact on others:
  - design for disabled
  - elderly
  - Different religious groups.
- Positive and negative impacts new products have on the environment:
  - continuous improvement



	<ul style="list-style-type: none"> <li>• efficient working</li> <li>• pollution</li> <li>• Global warming.</li> </ul> <ul style="list-style-type: none"> <li>• The contemporary and potential future use of:             <ul style="list-style-type: none"> <li>• automation</li> <li>• computer aided design (CAD)</li> <li>• computer aided manufacture (CAM)</li> <li>• flexible manufacturing systems (FMS)</li> <li>• just in time (JIT)</li> <li>• Lean manufacturing.</li> </ul> </li> <li>• That it is important to consider scenarios from different perspectives and considering:             <ul style="list-style-type: none"> <li>• planned obsolescence</li> <li>• design for maintenance</li> <li>• ethics</li> <li>• the environment.</li> </ul> </li> </ul>
<b>Assessment</b>	<p><i>Marking Point</i>  <b>Piece of classwork:</b>          Students will be required to write their own practice design brief and must complete an initial interpretation and identification of suitable research.</p> <p><i>Marking Point 2</i>  <b>Homework Assignment 1</b>          Students will complete a second design brief.</p> <p><i>Marking Point 3</i>  <b>Piece of classwork:</b>          Students will complete ten Initial Design Ideas.</p>
<b>Cultural enrichment</b>	<p>As part of home learning students will look into the work of others, this includes designers and companies. Students will create a project surrounding their chosen designer/ company.</p> <p>During the Autumn term students will focus on the following topics:</p> <ul style="list-style-type: none"> <li>• Industry and Enterprise</li> <li>• Sustainability</li> <li>• People, Culture and Society</li> <li>• Environment</li> </ul> <p>Students will be able to look into the impact that the work of the design industry has on these areas.</p> <p>There will be opportunities to look at articles and visit local organisations to gather primary research.</p>
<b>Character</b>	 <p>Q of S          Optimism</p> <p><b>Optimism:</b> Students will be encouraged to reflect on their progress throughout each term and establish targets for development.</p>
<b>Autumn 2</b>	
<b>Knowledge</b>	<p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> <li>• Core Technical principles</li> <li>• Specialist Technical principles</li> <li>• Designing and making principles</li> </ul> <p>During this half term students will focus on new and emerging technologies.          In relation to this students' will complete project based tasks and knowledge will center around:</p> <ul style="list-style-type: none"> <li>• Prototype development</li> <li>• Selection of materials and components</li> </ul>



	<ul style="list-style-type: none"> <li>• Material management</li> <li>• Specialist tools and equipment</li> <li>• Specialist techniques and processes</li> </ul>
<b>Skills</b>	<p>Students will need to apply the core and specialist technical principles and design and making principles for the topics being studied.</p> <p>Students will learn practical skills and application for working with drawing skills and materials which can include:</p> <ul style="list-style-type: none"> <li>• Design and develop prototypes in response to client wants and needs.</li> <li>• Select and use materials and components appropriate to the task considering functional need, cost and availability.</li> <li>• Cut materials efficiently and minimise waste</li> <li>• Use appropriate marking out methods, data points and coordinates</li> <li>• Select and use specialist tools and equipment, including hand tools, machinery, digital design &amp; manufacture, appropriate for the material and/or task to complete quality outcomes.</li> <li>• Select and use specialist techniques and processes appropriate for the material and/or task and use them to the required level of accuracy in order to complete quality outcomes.</li> <li>• Prepare a material for a treatment or finish.</li> <li>• Apply an appropriate surface treatment or finish.</li> </ul>
<b>Assessment</b>	<p><i>Marking Point 1</i>  <b>Piece of classwork:</b>          Practical Assessment          Assessment of the practical work that students have produced as part of the current project. Quality and skills will be assessed</p> <p><i>Marking Point 2</i>  <b>Homework Assignment 2</b>          Students will complete materials research.</p> <p><i>Marking Point 3</i>          At a time decided by the school management, all students will sit a <b>progress test</b> of two hours in length. The test will be in the format that will be encountered by students at the end of the course in the summer term of Year 11.</p>
<b>Cultural enrichment</b>	<p>As part of home learning students will look into the work of others, this includes designers and companies. Students will create a project surrounding their chosen designer/ company.</p> <p>During the Autumn term students will focus on the following topics:</p> <ul style="list-style-type: none"> <li>• Industry and Enterprise</li> <li>• Sustainability</li> <li>• People, Culture and Society</li> <li>• Environment</li> </ul> <p>Students will be able to look into the impact that the work of the design industry has on these areas.</p> <p>There will be opportunities to look at articles and visit local organisations to gather primary research.</p>
<b>Character</b>	 <p>Q of S Empathy</p> <p><b>Empathy:</b> 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 issues which relate to the use of wood and timber in the manufacture of product.</p>
<b>Spring 1</b>	
<b>Knowledge</b>	The knowledge, understanding and skills that all students must develop are separated into:



	<ul style="list-style-type: none"> <li>• Core Technical principles</li> <li>• Specialist Technical principles</li> <li>• Designing and making principles</li> </ul> <p>During this half term students will focus on energy generation and storage. In relation to this students' will complete project based tasks and knowledge will center around:</p> <ul style="list-style-type: none"> <li>• Fossil fuels</li> <li>• Nuclear power</li> <li>• Renewable energy</li> <li>• Energy storage systems including batteries</li> <li>• Design strategies</li> <li>• Communication of design ideas</li> </ul>
<b>Skills</b>	<p>Students will need to apply the core and specialist technical principles and design and making principles for the topics being studied.</p> <p>Students will learn practical skills and application for working with drawing skills and materials which can include:</p> <ul style="list-style-type: none"> <li>• How power is generated from:             <ul style="list-style-type: none"> <li>• coal</li> <li>• gas</li> <li>• oil.</li> </ul> </li> <li>• Arguments for and against the selection of fossil fuels.</li> <li>• How nuclear power is generated.</li> <li>• Arguments for and against the selection of nuclear power.</li> <li>• How power is generated from:             <ul style="list-style-type: none"> <li>• wind</li> <li>• solar</li> <li>• tidal</li> <li>• hydro-electrical</li> <li>• biomass.</li> </ul> </li> <li>• Arguments for and against the selection of renewable energy.</li> <li>• Kinetic pumped storage systems.</li> <li>• Alkaline and re-chargeable batteries.</li> </ul>
<b>Assessment</b>	<p><i>Marking Point 1</i> <b>Piece of classwork:</b> Students will be required to carry out some research on renewable energy will be assessed.</p> <p><i>Marking Point 2</i> <b>Piece of classwork:</b> As part of their project during Spring term students will be required to produce a design specification, this will be an assessed against the suitability against the design brief</p> <p><i>Marking Point 3</i> <b>Homework Assignment 3.</b> Students will identify possible design development pieces of work and carry out at least three of these.</p>
<b>Cultural enrichment</b>	<p>As part of home learning students will look into the work of others, this includes designers and companies. Students will create a project surrounding there chosen designer/ company.</p> <p>During the Spring term students will focus on the following topics:</p> <ul style="list-style-type: none"> <li>• Fossil fuels</li> <li>• Nuclear power</li> <li>• Renewable energy</li> </ul> <p>Students will be able to look into the impact that the work of the design industry has on these areas.</p> <p>There will be opportunities to look at articles and visit local organisations to gather primary research.</p>
<b>Character</b>	Q of S



Q of S

Creativity & Curiosity

**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.

## Spring 2

### Knowledge

The knowledge, understanding and skills that all students must develop are separated into:

- Core Technical principles
- Specialist Technical principles
- Designing and making principles

During this half term students will focus on energy generation and storage.

In relation to this students' will complete project based tasks and knowledge will center around:

- Prototype development
- Selection of materials and components
- Material management
- Specialist tools and equipment
- Specialist techniques and processes

### Skills

Students will need to apply the core and specialist technical principles and design and making principles for the topics being studied.

Students will learn practical skills and application for working with drawing skills and materials which can include:

- Design and develop prototypes in response to client wants and needs.
- Select and use materials and components appropriate to the task considering functional need, cost and availability.
- Cut materials efficiently and minimise waste
- Use appropriate marking out methods, data points and coordinates
- Select and use specialist tools and equipment, including hand tools, machinery, digital design & manufacture, appropriate for the material and/or task to complete quality outcomes.
- Select and use specialist techniques and processes appropriate for the material and/or task and use them to the required level of accuracy in order to complete quality outcomes.
- Prepare a material for a treatment or finish.
- Apply an appropriate surface treatment or finish.

### Assessment

*Marking Point 1*

**Piece of classwork:**

Students will complete a final evaluation of the students project overall.

*Marking Point 2*

**Homework Assignment 2**

Students will use previous home learning assignments to inform their final design idea. They need to produce a report.

*Marking Point 3*

At a time decided by the school management, all students will sit a **progress test** of two hours in length. The test will be in the format that will be encountered by students at the end of the course in the summer term of Year 11.


### Cultural enrichment

As part of home learning students will look into the work of others, this includes designers and companies. Students will create a project surrounding there chosen designer/ company.

During the Spring term students will focus on the following topics:

- Fossil fuels
- Nuclear power
- Renewable energy





	<p>Students will be able to look into the impact that the work of the design industry has on these areas.</p> <p>There will be opportunities to look at articles and visit local organisations to gather primary research.</p>
<b>Character</b>	<div style="display: flex; justify-content: space-around;">   </div> <p>Q of S Responsibility &amp; Reflection</p> <p><b>Responsibility:</b> 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><b>Reflection:</b> Students will be encouraged to reflect on their progress throughout each term and establish targets for development.</p>


## Summer 1

<b>Knowledge</b>	<p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> <li>• Core Technical principles</li> <li>• Specialist Technical principles</li> <li>• Designing and making principles</li> </ul> <p>During this half term students will focus on the work of others. In relation to this students' will complete project based tasks and knowledge will center around:</p> <ul style="list-style-type: none"> <li>• Research into the work of past and present designers and companies to inform their own designing.</li> <li>• Design strategies</li> <li>• Communication of design ideas</li> <li>• Prototype development</li> </ul>
<b>Skills</b>	<p>Students will need to apply the core and specialist technical principles and design and making principles for the topics being studied. Students will learn practical skills and application for working with drawing skills and materials which can include:</p> <ul style="list-style-type: none"> <li>• Investigate, analyse and evaluate the work of past and present designers and companies to inform their own designing.</li> <li>• Generate imaginative and creative design ideas using a range of different design Strategies</li> <li>• Explore and develop their own ideas including sketching and modelling</li> <li>• Develop, communicate, record and justify design ideas using a range of appropriate techniques such as:             <ul style="list-style-type: none"> <li>• freehand sketching, isometric and perspective</li> <li>• 2D and 3D drawings</li> <li>• system and schematic diagrams</li> <li>• annotated drawings that explain detailed development or the conceptual stages of designing</li> <li>• exploded diagrams to show constructional detail or assembly</li> <li>• working drawings: 3rd angle orthographic, using conventions, dimensions and drawn to scale</li> <li>• computer based tools</li> <li>• modelling: working directly with materials and components, eg card modelling</li> </ul> </li> <li>• Design and develop prototypes in response to client wants and needs.</li> </ul>
<b>Assessment</b>	<p><i>Marking Point 1</i> <b>Piece of classwork:</b> As part of their project during Summer term students will be required to produce a design specification, this will be an assessed against the suitability against the design brief.</p> <p><i>Marking Point 2</i> <b>Homework Assignment 2</b></p>



	<p>Students will complete the manufacturing plan for their final product.</p> <p><i>Marking Point 3</i>  <b>Piece of classwork:</b>            Students will produce a final developed drawing of the product to fulfil the design brief set.</p>
<b>Cultural enrichment</b>	<p>As part of home learning students will look into the work of others, this includes designers and companies. Students will create a project surrounding their chosen designer/ company.</p> <p>During the Spring term students will complete an independent project that will allow them to extend the knowledge that they have learnt.            There will be opportunities to look at articles and visit local organisations to gather primary research.</p>
<b>Character</b>	<div style="display: flex; justify-content: space-around;">   </div> <p>Q of S            Practice &amp; Resiliency  <b>Resiliency:</b> As students move into their next materials topics there will be a drive on improving and developing their understanding of key topics and investigation techniques from Autumn 2, students will develop resiliency through acting on feedback to enhance their performance in research, design and practical assessed pieces of work.</p> <p><b>Practice:</b> 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>
<b>Summer 2</b>	
<b>Knowledge</b>	<p>The knowledge, understanding and skills that all students must develop are separated into:</p> <ul style="list-style-type: none"> <li>• Core Technical principles</li> <li>• Specialist Technical principles</li> <li>• Designing and making principles</li> </ul> <p>During this half term students will focus on the work of others.            In relation to this students' will complete project based tasks and knowledge will center around:</p> <ul style="list-style-type: none"> <li>• Selection of materials and components</li> <li>• Material management</li> <li>• Specialist tools and equipment</li> <li>• Specialist techniques and processes</li> </ul>
<b>Skills</b>	<p>Students will need to apply the core and specialist technical principles and design and making principles for the topics being studied.            Students will learn practical skills and application for working with drawing skills and materials which can include:</p> <ul style="list-style-type: none"> <li>• Select and use materials and components appropriate to the task considering functional need, cost and availability.</li> <li>• Cut materials efficiently and minimise waste</li> <li>• Use appropriate marking out methods, data points and coordinates</li> <li>• Select and use specialist tools and equipment, including hand tools, machinery, digital design &amp; manufacture, appropriate for the material and/or task to complete quality outcomes.</li> <li>• Select and use specialist techniques and processes appropriate for the material and/or task and use them to the required level of accuracy in order to complete quality outcomes.</li> <li>• Prepare a material for a treatment or finish.</li> <li>• Apply an appropriate surface treatment or finish.</li> </ul>
<b>Assessment</b>	<p><i>Marking Point 1</i>  <b>Piece of classwork:</b>            Final Prototype model will be manufactured using final design idea drawing completed for home learning assignment.</p> <p><i>Marking Point 2</i></p>



	<p><b>Homework Assignment 3</b> Although the students are not manufacturing an actual product they will need to undertake an evaluation of the written work they have completed.</p> <p><i>Marking Point 3</i> At a time decided by the school management, all students will sit a <b>progress test</b> of two hours in length. The test will be in the format that will be encountered by students at the end of the course in the summer term of Year 11.</p>
<b>Cultural enrichment</b>	<p>As part of home learning students will look into the work of others, this includes designers and companies. Students will create a project surrounding their chosen designer/ company.</p> <p>During the Spring term students will complete an independent project that will allow them to extend the knowledge that they have learnt.</p> <p>There will be opportunities to look at articles and visit local organisations to gather primary research.</p>
<b>Character</b>	 <p>Q of S Motivation</p> <p><b>Motivation:</b> Like most topics being covered throughout the academic year in relation to materials students will undertake a range of sampling and practice practical tasks. An essential part of completing the work is for the students to show self-motivation.</p>