

## Design and Technology

As part of our delivery of the National Curriculum for Design and Technology at Holy Trinity Academy, students complete a range of varied projects that cover the five key areas of the curriculum content; designing, manufacture, evaluation, technical knowledge and food / nutrition. The following information provides an overview of projects that students will complete, covering these key areas of the curriculum at Key Stage 3.

### Year 7

Students will work on three classroom based projects during the course of the school year, as well as an extended home-learning project, all of which will have elements of the GCSE and vocational options that we offer for Y9 – 11. Projects are run on a ‘carousel’, therefore the order in which students complete the projects outlined below will vary depending on their teaching group; students will complete all projects during the academic year.

	AUTUMN TERM	SPRING TERM	SUMMER TERM
YEAR 7	<p><b>CAM Toy</b></p> <p>In ‘Materials Technology’, students work on a school-based project and an extended ‘home-learning’ project.</p> <ul style="list-style-type: none"> <li>In the first school-based project, students manufacture a ‘CAM toy’ product where they learn about timber manufacture and mechanical systems. They also learn about CAD (computer aided design) and CAM (computer aided manufacture).</li> <li>In the extended ‘home-learning’ project, the focus is more on ‘systems and control’ technical knowledge and understanding. During the project, students will complete several investigations and research-based tasks focused on the development of a prototype ‘pinball machine’, where they will have the opportunity to develop a solution to the project brief using different concept development techniques including 3D design work and model making.</li> </ul>	<p><b>Maze Game</b></p> <p>The second school-based project is to design and manufacture a laser cut ‘maze game’ product. Here, student will:</p> <ul style="list-style-type: none"> <li>Consolidate and further develop their knowledge of CAD/CAM by creating a handheld game.</li> <li>Develop their graphic design skills through developing a packaging design for their manufactured product.</li> <li>In both the ‘CAM toy’ and ‘maze game’ projects, students develop their own design solutions and manufacture a prototype product using different skills, tools, and equipment.</li> </ul>	<p><b>Food Technology – Healthy Eating Project</b></p> <p>Students will have several sessions in the food room and will work on a mixture of practical and theory session based around the theme of ‘Healthy Eating’ throughout the project. The practical sessions include preparation of dishes including vegetable curry, pasta salad and a healthy crumble. Students learn about Health and Safety in the food preparation environment, nutrition, and other food-related issues such as sustainability and food packaging information.</p> <p>Through a mixture of practical and theory-based sessions, students will:</p> <ul style="list-style-type: none"> <li>understanding and applying the principles of nutrition and health</li> <li>cook a repertoire of predominantly savoury dishes so that they can feed themselves and others a healthy and varied diet.</li> </ul>

## Year 8

Students will work on three projects over the course of the school year in Year 8, with home-learning integrated into all three projects. As in Year 7, in addition to covering the Key Stage 3 National Curriculum, these taught projects help continue to prepare students for further elements of the GCSE and vocational options that we offer at Key Stage 4.

<p style="text-align: center;">YEAR 8</p>	<p><b>Design Movement Inspired Clock</b></p> <p>In the workshop, students design and manufacture a clock inspired by the work of others. During this project, students will cover:</p> <ul style="list-style-type: none"> <li>• Research into influential design groups and designers.</li> <li>• Development of creative concepts based on a range of manufacturing processes and techniques.</li> <li>• Use of CAD/CAM, model making and iterative design throughout the design development.</li> <li>• Deciding upon a manufacturing strategy</li> <li>• Consideration of appropriate tools / equipment.</li> <li>• Product manufacture, ongoing analysis, testing, and evaluation.</li> </ul>	<p><b>Upcycled Textiles Project</b></p> <p>Students will also complete a project focused on the use of textiles. Through completion of this project, students will:</p> <ul style="list-style-type: none"> <li>• Learn about the production and use of textiles in a commercial sense, culminating in the manufacture their own product using reclaimed materials.</li> <li>• Consider design and production planning all the way through to construction and manufacture of a prototype product.</li> <li>• In the build up to concept development, the project focuses on design and the environment. Here, students consider several moral and ethical issues when designing and manufacturing products, helping them to make more conscientious decisions in relation to these issues.</li> </ul>	<p><b>Food Technology – Global Gastronomy</b></p> <p>Students will revisit the food room, again working on a mixture of practical and theory sessions; this time, based around the theme of ‘Global Gastronomy’. The practical sessions focus on a range of food preparation skills and use of different equipment, through preparation of dishes including scones, pizza (base and preparation of toppings), stir fry and bean burgers. Students extend their knowledge of ‘health, safety and hygiene’ in the food preparation environment, as well as gaining new insight into areas such as nutritional requirements, special dietary needs, and portion control.</p> <p>Through a mixture of practical and theory-based sessions, students will:</p> <ul style="list-style-type: none"> <li>• become more competent in a range of cooking techniques, building upon skills learnt in Y7.</li> <li>• understand the source, seasonality and characteristics of a broad range of ingredients.</li> </ul>
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## Key Stage 4: Design and Technology (OCR Syllabus)

### Component 1: Principles of Design and Technology (External Examination)

The exam component, titled 'Principles of design and technology', includes both the 'core' principles that all students must know, and 'in-depth' principles that are more specific to the materials or systems they have deeper practical and design experience of. The exam is worth 50% of the total GCSE grade for the subject.

### Component 2: Iterative Design Challenge (Non-exam Assessment – 'NEA')

The 'non-exam' component is a design and make activity based around one of three themes set yearly by the exam board. Students produce a detailed portfolio of the development of their product from first ideas right the way through to manufacture and evaluation. This is submitted electronically in the form of an electronic portfolio and is also worth 50% of the total grade for the subject.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 9	<p>In-depth knowledge 1: Natural and manufactured timber</p> <p>Making skills: NT phoneholder – writing a brief, specification, modelling, use of hand and machine tools (Autumn 1&amp;2)</p>	<p>Categories of materials: Paper &amp; Boards 3D drawing usability</p> <p>Assessment 1: Section A multiple choice, isometric drawing</p>	<p>In-depth knowledge 2: Thermo and thermosetting polymers</p> <p>Making skills: Superhero moodlight – customer needs, soldering, modelling, evaluation (Spring 1&amp;2)</p>	<p>Sources of energy; electronic systems, environmental, social and economic, ethics</p> <p>Assessment 2: Section A multiple choice, short answer questions</p>	<p>Categories of materials: metals characteristic properties of materials</p> <p>Making skills: Jewellery box, including hand tools and pewter casting, drawing skills</p>	<p>Categories of materials: fibres &amp; textiles sources of information and thinking</p> <p>Assessment 3: Section B style question (extended writing)</p>
YEAR 10	<p>Ergonomics &amp; Anthropometrics New &amp; emerging technology controlled movement</p> <p>Making skills: stationery holder from offcuts (customer need, function and using a context)</p>	<p>In-depth knowledge 1 &amp; 2, recap, recall, processes, properties</p> <p>Assessment 4: Section B</p> <p>Processes: Vacuum forming/thermoforming, making a mould strip heater</p>	<p>NEA mock to outline portfolio expectations: context research, client questionnaire, product analysis, initial designs, design development (into Spring 2)</p>	<p>Evaluation, improvements, and feedback of NEA mock</p> <p>Assessment 5: Section A &amp; B</p>	<p>Revision and building of Knowledge Organisers for full mock exam in Summer 2</p>	<p>1 June NEA start</p> <p>Full mock 1</p>

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 11	NEA  Question a day revision	NEA  Full mock 2 Question a day revision	NEA  Question a day revision	NEA  Question a day revision	Revision & written exam	