

Design and Technology – Curriculum Map

Approach to KS3 D&T Curriculum at Holy Trinity Academy

As part of our delivery of the National Curriculum for D&T 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

In Year 7, students all start the year completing a base line assessment and a skill-building 'initial project' for the first half-term prior to set changes in October. Once set changes have been implemented, students will then work on three projects during the school year, 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.

| | Y7 'INTRODUCTION PROJECT' (FIRST HALF TERM) | MECHANISMS PROJECT | CAD / CAM 'MAZE GAME' PROJECT | FOOD PROJECT – HEALTHY EATING |
|--------|--|--|---|--|
| YEAR 7 | <p><i>Skill-building 'initial project' for the first half-term prior to set changes in October.</i></p> <p>Students will complete a baseline assessment as well as a series of lessons covering some of the key skills required in Design & Technology, including analysis, mind-mapping, drawing and practical skills.</p> <p>As well as providing an opportunity to gauge student's baseline ability in Design and Technology, this initial project helps enable students to develop their D&T skills regardless of prior learning and starting points. Intentions of the project are to build analysis, practical and drawing skills through completion of several differentiated tasks which provided a good level of challenge to all students.</p> | <p>In 'Materials Technology', students will learn about several mechanisms, both through theory and practical based tasks, culminating in the design and manufacture of a mechanical 'CAM toy'; through doing so, they will also learn about timber manufacture and mechanical systems.</p> <p>Through completing this project, students will learn about several different mechanisms including:</p> <ul style="list-style-type: none"> • CAMs • Geared systems • Pulleys • Levers / linkages <p>Students will develop a better understanding of how these systems work and how they can incorporate some of them into their own designs.</p> | <p>Students will complete a 'CAD / CAM' focused project where the focus is to design and manufacture a laser cut 'maze game' product. Here, students will:</p> <ul style="list-style-type: none"> • Develop practical and theory knowledge of CAD/CAM by working on computer-based design (CAD) activities and exercises, leading to the manufacture of a handheld game using the CAM facilities within the department. • Develop graphic design skills through developing a packaging design for their manufactured product. • In both the 'mechanisms' and 'maze game' projects, students develop their own design solutions and manufacture a prototype product using different skills, tools, and equipment. | <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"> • understanding and applying the principles of nutrition and health • cook a repertoire of predominantly savoury dishes so that they can feed themselves and others a healthy and varied diet. |

Year 8

In Year 8, again all students start the year completing skill-building ‘introduction project’ for the first half-term prior to set changes in October. Once set changes have been implemented, students will then work on three projects during the school year. As in Y7, 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.

| | Y8 ‘INITIAL PROJECT’ (FIRST HALF TERM) | CLOCK PROJECT | PHOTO FRAME PROJECT | FOOD PROJECT – GLOBAL GASTRONOMY |
|--------|---|--|---|---|
| YEAR 8 | <p><i>Skill-building ‘initial project’ for the first half-term prior to set changes in October.</i></p> <p>Students will complete a series of lessons covering some of the key skills required in Design & Technology, including taking a more detailed look at the design process, considering the needs of clients when designing product and advanced drawing techniques.</p> <p>This initial project helps enable students to develop their D&T skills regardless of prior learning and starting points. Intentions of the project are to build analysis, practical and drawing skills through completion of several differentiated tasks which provided a good level of challenge to all students.</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"> • Research into influential design groups and designers. • Development of creative concepts based on a range of manufacturing processes and techniques. • Use of CAD/CAM, model making and iterative design throughout the design development. • Deciding upon a manufacturing strategy • Consideration of appropriate tools / equipment. <p>Product manufacture, ongoing analysis, testing, and evaluation.</p> | <p>Students will also complete a project focused on more traditional workshop manufacturing methods. Through completion of this project, students will work focus on the following areas:</p> <ul style="list-style-type: none"> • Learning about the production and use of timbers and polymer, resulting in the manufacture their own product using reclaimed materials. • Consider design and production planning all the way through to construction and manufacture of a prototype product. • The project focuses on design and the environment; students consider several moral and ethical issues when designing and manufacturing products, helping them to make more conscientious decisions when designing and making products. • Workshop based skills taught include use of hand tools, woodworking machinery and finishing techniques. | <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"> • become more competent in a range of cooking techniques, building upon skills learnt in Y7. • understand the source, seasonality and characteristics of a broad range of ingredients. |

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&2)</p> | <p>Categories of materials: Paper & 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&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 & textiles sources of information and thinking</p> <p>Assessment 3: Section B style question (extended writing)</p> |
| YEAR 10 | <p>Ergonomics & Anthropometrics New & 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 & 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 & 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 | <p>NEA Focus: Investigation of Design Context</p> <ul style="list-style-type: none"> ➤ Client research ➤ Product Analysis ➤ Product Specification <p>Question a day revision</p> | <p>NEA Focus: Design Ideas</p> <ul style="list-style-type: none"> ➤ Initial Ideas ➤ Review of concepts ➤ Model Making ➤ Design Development (including CAD) <p>Full mock 2 Question a day revision</p> | <p>NEA Focus: Development of Final Concept / Prototype</p> <ul style="list-style-type: none"> ➤ Final Design ➤ Production Planning Product Manufacture ➤ Making Log <p>Question a day revision</p> | <p>NEA Focus: Review of Project</p> <ul style="list-style-type: none"> ➤ Product Manufacture ➤ User Testing ➤ Product Evaluation <p>Question a day revision</p> | <p>NEA Focus: Final Checks / Review prior to final submission</p> <p>Revision & written exam</p> | |