**Greig City Academy Key Stage 3 Curriculum**

**Design & Technology**

**Purpose of study**

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and other’s needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

**Aims**

At GCA the Design and Technology department aims to ensure that all pupils:

* develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
* build upon and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
* critique, evaluate and test their ideas and products and the work of others
* understand and apply the principles of nutrition and learn how to cook

**Attainment targets**

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study. Pupils will build up their skills, knowledge and understanding through different rotations. Within the rotations there will be a slight cross over between the terms. At the end of every rotation an end of unit test is set and marked for the next D&T Teacher

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|  | **Autumn Term** | **Spring Term** | **Summer Term** |
| **Year 7** | ***TEXTILES***  ***‘Fabric Portraits***’  Learning about: User needs & user centered design. Designing, solving design problems & making design decisions. Various skills in textiles, use of basic materials, techniques and processes. Learning about basic health and safety. How to evaluate a design and making of a product.  ***MATERIALS*** *(Combination of Woods & Plastics)*  ***‘Steady Hand Game’***  Learning about: Research and exploration, Designing, solving design problems & making design decisions. Materials (how to select appropriate materials) manufacturing processes and producing a fully working prototype. Learning about basic health and safety. How to evaluate a design and making of a product.  ***PRODUCT DESIGN***  ***‘CAD CAM project’***  Designing and making a product using CAD Software (Techsoft 2D Design) and CAM via laser cutter. Using these processes correctly and safely. Learning about basic health and safety. How to evaluate a design and making of a product.  ***FOOD AND NUTRITION***  ***‘Healthy Eating’***  In year 7 students will be developing basic skills using a wide range of healthy foods. The Healthy Eating unit aims to provide students with the knowledge of healthy eating, a balanced diet and recent government initiatives. All students in Year 7 are encouraged to follow basic recipes that allow them to express their creativity and imagination alongside developing key skills in food preparation and hygiene. Students are taught how to chop foods safely and hygienically as well as how to use equipment correctly. Alongside practical work, students are encouraged to develop their written work by evaluating their products, taste testing shop bought items and using technical language.  ***ROBOTICS***  ***‘Mechanisms’***  Learning about gears, levers, linkages, systems and control, programming and robotics. Construction and building units. Learning about basic health and safety. How to evaluate a design and making of a product.  ***STEM/MATERIALS***  ***‘STEM rocket cars’***  Project is based on the Bloodhound SSC and the land speed record. Students learn about factors that will influence the design of their rocket car through experiments. Design and manufacture their own rocket car for a class race at end of project. Learning about smart materials and how they are used in industry. Using workshop tools and machines. Learning about basic health and safety. How to evaluate a design and making of a product. | ***TEXTILES***  ***‘Fabric Portraits***’  Learning about: User needs & user centered design. Designing, solving design problems & making design decisions. Various skills in textiles, use of basic materials, techniques and processes. Learning about basic health and safety. 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| **Year 8** | ***TEXTILES***  ‘Under Sea Bag’  Learning about various skills, using various materials, techniques and processes. Using sewing machines and various stitching techniques by hand. Designing and making a bag. To produce a detailed evaluation of a product.  ***MATERIALS*** (Woods)  ‘Night Light’ project  Learning about Techsoft 2D Design and the laser cutter to produce products. Using these processes correctly and safely. Selecting appropriate materials for manufacture. To produce a detailed evaluation of a product.  ***PRODUCT* *DESIGN***  V&A Innovate Competition built into timetabled lessons  Learning about: designing, manufacturing for different communities (Autumn Term).  ‘Bright Ideas’ – Learning about smart materials and sustainability and industry  ***FOOD AND NUTRITION***  ***‘Cultural Foods’***  In year 8 students will be developing their basic skills practiced in Year 7. In the units of work, their skills will be combined with knowledge of food ingredients and nutrition. Healthy eating is still a very strong focus at this stage; however, students will develop their knowledge alongside different baking processes including bread-based pizza, couscous and pear marbled cake. They will learn about the function of ingredients and their chemical properties with a combination of practical and experimental theory lessons.  ***ROBOTICS***  Electronics  Learning about: different components, using electronics to embed intelligence that responds to inputs and control outputs eg. programmable components (micro-controllers) into products. To produce a detailed evaluation of a product  ***MATERIALS*** (Metals)  Pewter casting:  Design and make – Jewellery/body adornment Using workshop tools and machines. Learning in-depth knowledge on health and safety. 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| **Year 9** | ***TEXTILES***  Advanced skills portfolio in preparation for the options. Design and make task set by the teacher. To follow an iterative process.  ***MATERIALS*** (Plastics)  USB project  Designing, solving design problems & making design decisions. Design and make a casing for a usb, learning about plastics, Techsoft 2D Design and the laser cutter to produce various layers. Using these processes correctly and safely.  ***PRODUCT DESIGN***  Design Ventura Competition and Star Pack Competition (Autumn Term) Design brief is set by the organisation. Learning about iterative process, ergonomics & anthropometrics. Using a range of different design strategies. Competition Related Projects  ***FOOD AND NUTRITION***  **‘Foods from around the world’**  In year 9 students develop their independent learning in Food Technology. Students are encouraged to think about their own opinions to enhance their practical and food science experimental work in lessons. They are encouraged to begin thinking about the nutritional content of their dishes as well as the correct food hygiene procedures to prevent food illnesses. A strong focus on hygiene and safety prepares students for further study in the subject at Key Stage 4, and for a healthy lifestyle when leaving school. Students will be taught about the risk of food contamination and bacteria and they are assessed on how they use these skills in practical work. The Year 9 unit of work focuses on cooking a variety of food from around the World with healthy alternative dishes. This allows students to understand a wide range of dishes with different cooking properties and nutrition and opens up more opportunities for students to cook their own ideas for healthy and balanced meals.  ***ELECTRONICS & MATERIALS***  Design and manufacture a MONO Amplifier – Learning about electronics and systems and control. Sustainability, materials and environmental impact of materials and manufacture of products including product life cycle assessment. Looking at Alessi products for design influence of mono amplifier casing. | ***TEXTILES***  Advanced skills portfolio in preparation for the options. Design and make task set by the teacher. To follow an iterative process.  ***MATERIALS*** (Plastics)  USB project  Designing, solving design problems & making design decisions. Design and make a casing for a usb, learning about plastics, Techsoft 2D Design and the laser cutter to produce various layers. Using these processes correctly and safely.  ***PRODUCT DESIGN***  Design Ventura Competition and Star Pack Competition (Autumn Term) Design brief is set by the organisation. Learning about iterative process, ergonomics & anthropometrics. Using a range of different design strategies. 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