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## TECHNOLOGY

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### KEY STAGE 3

We offer our pupils the opportunity to learn in an exciting and interesting way; learning many of the skills they will require to lead a full and active life when they leave. In Technology we are concerned with education in its widest sense, providing modern learning environment for pupils to develop as designers of the future. Not only do we attempt to fully develop the talents of each individual pupil, but we encourage ingenuity, social responsibility and the ability to communicate accurately.

Throughout Key Stage 3 pupils will rotate through one of the five disciplines described below. They will spend approximately eight weeks in each area. The groups are primarily mixed ability and the order of rotation is dependent on the individual group. Technology in Years 7 and 8 form the foundation for National Curriculum Technology Key Stage 3. All work is based around problem solving and graphic design activities; some taught as specific skills and knowledge elements, some in a more thematic, open style. It is expected that all pupils will gain experience through working in a range of materials: Fabrics and Yarns, Food, Wood, Metal and Plastics. To complement these areas of study all pupils develop graphic skills and knowledge in using systems technology and information technology and robotic control, making full use of our recently updated machinery and fully equipped ICT suite.

At **Key Stage 4**, pupils are able to specialise in one or more areas of Technology. These areas are Food Preparation and Nutrition, Textiles, Graphics and Resistant Materials. All these courses will follow the full course to GCSE level or equivalent. The GCSE grade consists of two elements, a coursework component and a final written exam. Pupils completing these courses are encouraged to design and create work independently wherever possible, helping them to prepare for life and work beyond Crofton Academy.

The Technical Awards for Materials Technology give students a more practical approach to learning as opposed to more theory based learning. This approach is also adopted for the "graphic" visual commitment in Technical Awards. The unit is divided into three elements: guided assessment work = 30%, Project work = 30%, and a final written exam = 40% of the Award.

### YEAR 7

**Graphics** - Pupils will, through a series of short tasks, learn graphic presentation techniques by creating simple isometric images. They will then investigate nets and manufacture 3D shapes from card.

**Resistant Materials (Wood)** - Pupils will carry out a design and make exercise exploring material properties, ergonomics and environmental issues. They will use the information to guide them as they design, model and make a kitchen utensil for use in their home.

**Resistant Materials (Plastic)** - Pupils learn to design and make a plastic keep-sake using their knowledge of plastics and workshop processes. Using their knowledge of plastics and exploiting the working characteristics, pupils complete a 'design and make' activity. This is done by using Computer Aided Design and both traditional and modern production methods. They create a simple colourful 3D keepsake.

**Food** - Pupils are introduced to the importance of food hygiene and safety in the food tech classroom. Pupils will focus on healthy eating and nutrients and throughout practical lessons they will develop practical skills – preparing fruit and vegetables, simple snacks, baked products and cereal bars.



**Textiles** - Pupils are asked to design and make a soft toy that will appeal to children or teenagers and takes inspiration from the theme "Day of the Dead". Pupils will be introduced to the importance of working safely in the textiles class room and experiment with the techniques of applique and hand embroidery during the production of their toy.

## YEAR 8

**Resistant Materials (Wood)** - Pupils research and investigate the learning capabilities of 3-5 year olds. Then, using the information gained, they design and manufacture a wooden travel game with Computer Aided Design. Some pupils will then go on to package their product for presentation.

**Systems (Electronics)** - Pupils will investigate simple electronic components and circuit building using LED's (Light Emitting Diodes). They will then research, design and manufacture a simple electronic outcomes that could be given as a present.

**Robotics** - Pupils are asked to build a working Robot using the VEX IQ Robot kit. The Robots are then programmed using Robot Virtual worlds. The pupils learn how to solve problems associated with Robot Control Technology used in industry.

**Food** - Pupils will develop their knowledge of the uses of flour and eggs in cooking and develop their baking skills by creating a range of products including omelettes, tortilla wraps and rock buns. Pupils will also consider food hygiene and safety in the kitchen, and re-cap their knowledge or nutrition and the "Eatwell Guide".

**Textiles** – Pupils are asked to design and make a juggling kit. Pupils will develop their sewing machine skills by learning how to thread a sewing machine correctly and use straight and reverse stitch. Pupils will experiment in how to add colour to fabric through a range of printing techniques.

They will develop more in-depth skills in their chosen subject areas but will remain within that specific area working in materials that will give them a greater depth of understanding of the subject. They will continue to work in small practical projects but this will be accompanied by the theory work that will form a sound foundation for the Key Stage 4 studies should students wish to continue with the subject through Years 10 and 11.

**Food** – The Year 9 topic is based on 'Festival Foods', where pupils are given the opportunity to research multicultural food which could be served from catering outlets. They will look at different cultures including Italian, Mexican, Chinese, Spanish and British foods. Also, the topic will focus on hygiene and food safety, food provenance, where our food comes from, and re-cap the "Eatwell Guide" healthy eating guidelines.

**Resistant Materials** – pupils have the opportunity to develop their knowledge and understanding of working in woods metals and plastics. This foundation year will develop the students' practical skills and through theory lessons gain a more in-depth appreciation of concepts relating to the production of items made in these materials. Pupils will undertake a number of design and make activities focussing on building their core skills in the following areas:

- Cutting and shaping.
- Permanent and non-permanent ways of joining materials
- Casting
- Simple electronics
- Construction techniques
- Designing imaginative products
- Types of mechanisms
- Folder construction



- CAD/CAM techniques

**Textiles** – pupils have the opportunity to select Textiles. The foundation year will develop [pupil's practical and theoretical skills and knowledge that will prepare them for the requirements of the Technical Award in Fashion and Textiles. Pupils will undertake a number of design and make activities focussing on building their core skills in the following areas:

- Joining fabrics
- Colouring fabrics
- Surface embellishment
- Applying fabrics
- Construction techniques
- Designing imaginative products
- Fabric manipulation and shaping for functional and decorative purposes
- Functional and decorative edge finishes

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#### **KEY STAGE 4**

The GCSE Food Preparation and Nutrition is an exciting and creative course which focuses on practical cooking skills so that pupils will develop a thorough understanding of nutrition, food processing and the working characteristics of food materials.

The qualification will enable pupils to gain confidence in their practical cooking skills and knowledge of nutrition.

The main areas of study are:

- Food, nutrition and health
- Food Science
- Food safety
- Food choice
- Food provenance

#### **YEAR 10**

Pupils will study a range of food and ingredients which should reflect the recommended guidelines for a healthy diet based on the main food commodity groups including:

- Bread, cereals, flour, oats, rice, potatoes and pasta
- Fruit and vegetables
- Milk, Cheese and yoghurt
- Meat, fish, eggs, soya, tofu, beans, nuts and seeds
- Butter, oil, margarine, sugar and syrup

During the course, pupils will develop their food preparation skills, use various equipment and will gain experience of using different cooking methods and cooking techniques.



## **YEAR 11**

Pupils undertake a single design and make activity (which they will produce under controlled conditions in school) and is selected from a range of board set tasks. Pupils will submit a concise design folder of approximately

20 pages of A3 paper and is expected to take approximately 45hrs. Pupils should include photographic evidence of their final designed food product and also at varying stages of making. The coursework is 60% of the total marks and the exam, taken in the summer term is 40% of the course marks.

## **TECHNOLOGY - GRAPHICS**

### **YEAR 10**

As from September 2017 pupils will study the new Technical award in Visual Communication.

This qualification is suited to pupils with a preference to more practical than theory based learning. The course will have a focus on creativity and helps pupils with a targeted career choice. This course is divided into 3 units.

**Unit 1** - Skills demonstration, will give pupils a hands on experience to show their competence in the 12 identified core skills. These are awarded as high medium or low levels of performance.

These skills are; Drawing and sketching in 2D and 3D, Using digital editing, Using typography, Application of colour theory, Producing publishing layouts, Application of surface development and card engineering using hand tools, Image capture and manipulation, Producing a Web-based design, Using printing processes, Using finishing techniques, Using CAD/CAM for model making and Teamwork.

**Unit 2** - Learners will undertake an extended project that showcases the skills they have developed in Unit 1 and knowledge they have developed.

**Unit 3** - Externally assessed unit, learners will show the fundamentals of the Visual Communication industry and the industrial and commercial processes that exist within it. They will explain about materials and their properties and also about possible careers within the industry.

### **How the course is assessed**

**Unit 1** - 30% of the unit. Approximately 36 guided learning hours split between teaching and assessment work.

**Unit 2** - 30% of the unit. Extended project work; Approximately 36 hours of guided learning and assessment work.

**Unit 3** - Fundamentals of visual communication. 40% of the unit. A written exam and multiple choice questions 1 hour 30 mins long. Pupils will respond to questions covering various aspects encountered through the course.

### **CURRENT YEAR 11**

Year 11 Graphics are taught through a single final project of their choice, which accounts for 60% of the final mark. Pupils are required to submit a portfolio which demonstrates their skills, knowledge and understanding of the design process. A practical solution has to be produced in 3D form of their final designs. As many skills as possible developed in Year 10 should be included within the final project. Work is broken down into discrete areas with specific hand in dates. Elements included are: Research, Design, Development, Computer Aided Design, Practical Solution and Evaluation.



## **TECHNOLOGY - RESISTANT MATERIALS**

Pupils will study the new AQA Technical award in Materials Technology. This qualification is suited to pupils with a preference in learning about working in woods metals and polymers (plastics). The course will have a focus on creativity and helps pupils with a chosen career choice in manufacturing. This course is split into 3 units.

**Unit 1** - Skills demonstration, will give pupils a hands on experience to show their competence in the 12 identified core skills. These are awarded as high medium or low levels of performance. Learners will through this produce a range of small made outcomes and record their work in a mini portfolio.

**Unit 2** - Learners will undertake an extended project that showcases the skills they have developed in Unit 1 and knowledge they have developed through unit 3, by responding to a pre-set design and make brief.

**Unit 3** - Externally assessed unit, learners will study materials and their working properties. They will gain knowledge of the working properties and characteristics of a wide range of woods metals and plastics.

### **How the course is assessed**

**Unit 1** - Approximately 36 guided learning hours split between teaching and assessment work.

**Unit 2** - Extended project work approximately 36 hours of guided learning and assessment work

**Unit 3** - Fundamentals of Materials Technology. A written exam and multiple choice questions 1 hour 30 mins long. Pupils will respond to questions covering various aspects encountered through the course.

## **CURRENT YEAR 11**

This subject is taught from September to Easter where pupils follow an exam set design brief which accounts for 60% of the GCSE grade. Pupils are required to submit a design portfolio, through which they will follow the design process, illustrating, modelling and developing their design proposals taking into account environmental and social concerns.

They will produce a practical solution in a resistant material reflecting their design. Their work will utilise many of the techniques and skills acquired through Y10.

The work is broken down into bite size manageable areas with specific hand in dates. Elements included are: Research, design, development, modelling making, testing and evaluating.

## **TECHNOLOGY - FASHION & TEXTILES**

This qualification will suit pupils who want to study fashion and textiles in a hands on, practical way that will help them to develop their knowledge, skills and experience, which could open the door to a career in the industry. This vocational qualification will fulfil entry requirements for both academy and vocational study Post-16, just as a conventional GCSE would.

### **Unit 1 – Skills demonstration (30%)**

Pupils will carry out a number of bite-sized projects to demonstrate their competence in the eight core skills. Pupils will produce a series of small made outcomes and record their work in a portfolio.

### **Unit 2 – Extended making project (30%)**

Pupils will undertake an extended project that showcases the skill they have developed in Unit 1 and the knowledge they have developed through Unit 3. Pupils will produce a made outcome in addition to a small portfolio to evidence the planning and development and testing and evaluation stages. The project will be in response to a brief, for example: "You've been invited to attend an interview at the London Fashion School. You



are required to take a garment that you have made with you to the interview. The garment must showcase your development and making skills to impress the tutors”.

**Unit 3 – Fundamentals of fashion and textiles (40%)**

This is a 1hour 30 minute exam paper. In preparation for the exam pupils will study the fashion and textiles industry and the industrial and commercial processes that exist within it. They will also learn about materials and their properties and also about the possible careers within the industry.