Technology Department: KS3 LTP

Vision

The Design and Technology Department is committed to delivering a curriculum that offers the broadest possible range of opportunities for our students. We are passionate about developing and encouraging creativity, teamwork, determination and resilience in all our students. We encourage students to explore attitudes towards the made world and how we live and work within it; to develop an understanding of technological processes, products, and their manufacture, and their contribution to our society.

We want our students to be problem solvers who are not afraid of making mistakes. Students learn by 'doing' and should be able to take risks, experiment and have multiple opportunities to design and make innovative products that solve real and relevant problems, within a variety of contexts, considering their own and others' needs, wants and values.

Teaching and Learning

We are passionate about the use of new technologies such as 3D printers, Laser cutters and Programmable devices. The aim is to fully equip our students with knowledge and skills for a possible future career in designing, technology, engineering, and be able to engage with technology in any context they may find themselves.

The department is made up of dedicated specialist design and technology teachers with expertise in Electronics, Textiles Technology, Product Design, Graphic Products, Food and Nutrition.

Recommended Internet Sites to help students achieve:

How stuff works	Design and Tech. online
Design and Technology. On the web	Technology Student
Mr D & T	Design and Technology Association
BBC GCSE Revision	V&A Museum
Designers guide to manufacturing	Sustainability navigator
University of Cambridge D&T resources	

Reading

Exploring Design and Technology for Key Stage 3

Eastlea
COMMUNITY SCHOOL

Areas covered in all rotations for each year group	**Design** Use research and exploration, such as the study of different cultures, to identify and understand user needs. Identify and solve your own design problems and understand how to reformulate existing design problems. Develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations. Use a variety of approaches to generate creative ideas. Develop and communicate design ideas.	**Make** Select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture. Select from and use a wider, more complex range of materials, components and ingredients, taking into account their properties.	**Evaluate** Analyse the work of past and present professionals and others to develop and broaden understanding. Investigate new and emerging technologies. Test, evaluate and refine ideas and products against a specification, taking into account the views of intended users and other interested groups Understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists	**Technical knowledge** Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions. Understand how more advanced mechanical systems used in their products enable changes in movement and force. Understand how more advanced electrical and electronic systems can be powered and used in their products.
Year 7 **(additional skills/theory for specific specialism)**				

Electronics Key Charms	Generate design ideas on 2D Design.	Manufacture final chosen product on the laser cutter	Evaluate and refine ideas and products taking into account the views of users.	Demonstrate knowledge and understanding of 2D CAD software in order to produce basic geometric shapes. Demonstrate how to work with accuracy, precision and within tolerance.
Graphics geometric shapes in 1 & 2 point perspective	Introduction of 1 & 2 point perspective drawings to create 3D Forms		Research work of past designers and advertisements	Communication of design ideas though technical drawing
Product Design Chocolate	Learn processes used to make products from Polymers Freehand sketching	Making prototypes Using hand tools and machine equipment General safety in the workshop Safe use of tools and equipment	Research the work of past and present designers.	Understand and use the properties of materials and the performance of structural elements to achieve functioning solutions
Textiles Technology Animal keyrings	Annotated hand drawn sketches paper prototypes	Hand stitching Designing patterns pattern cutting	Sustainable design in textiles manufacture and production	E-textiles: incorporating electronics into textile products Sustainability and 6 Rs Purpose of prototyping
Year 8 **(additional skills/theory for specific specialism)**				

Electronics Glasses	Generate design ideas on 2D Design. Create a 3D model of glasses on OnShape or TinkerCAD.	Manufacture final product on the laser cutter	Evaluate and refine their ideas and products taking into account the views of users.	Demonstrate the use of advanced features (in 2D Design) i.e. convert images to vectors, merge several shapes & change line colours. 3D Modelling
Product Design Shelter	Introduction to Biomimicry: Generating design ideas and perspective drawing. Design Ideas with rendering and annotation	Using hand tools such as craft knives and machine equipment. Making of prototype corrugated and foam board card	The work of past and present designers: Harry Beck Norman Foster Dyson	Life cycle analysis of material products and impacts on the environment.
Textiles Technology CAD printed bowtie	Annotated hand drawn sketches Paper prototypes	Construction using hand stitching Using CAD to create patterns Sublimation printing Pattern cutting	Use of CAD and CAM to create textile products.	Sources of fabrics and fibres Surface design: printing Sustainability and 6 Rs
Graphics Interior design project	Revisit one and two point perspective to draw interior spaces		The work of past and present designers: Jonathan Adler	Communication of design ideas though technical drawing
Year 9 **(additional skills/theory for specific specialism)**				

Electronics Night light	Design model on OnShape Paint 3D. Program microcontroller on TinkerCAD.	Microbit controllers. Manufacture final product on the 3D Printer.	Evaluate and refine their ideas and products taking into account the views of users. Understanding the impact of new and emerging technology on industry.	3D Modelling: Demonstrate a good understanding of CAD in order to produce complex geometric shapes and their final design. Electronics: Understand how to programme a microcontroller.
Product Design Clock	Using research into the theme Memphis. Develop a detailed specification to aid the design idea using freehand drawing	Using sustainable materials students develop their fully functioning, to scale proto-type of a clock using papers and boards.	The work of past and present design movements: Memphis	Students carry out short tasks to develop their understanding of properties of plastics. They explore different tools, machines and finishes in the Design and Technology workshop.
Textiles Technology Mobile phone holder	Annotated hand drawn sketches Paper prototypes	Machine stitching Heat transfer painting embroidery pattern designing pattern cutting	Evaluating and refining prototypes	Surface design: printing Smart materials: thermo, hydro and photochromic pigments
Graphics Technical Drawing skills to communicate design ideas	Build on technical drawing skills including isometric and oblique drawing, drawing nets		The work of past and present designers	Exploring exam style questions focussing on communication of design ideas.

Cooking and nutrition taught in year 7 and year 8

As part of students work with food, students will be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in Students will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables students to feed themselves and others affordably and well, now and in later life.

Within Food and Nutrition, the students will study:
- Principles of Nutrition
- Diet and Good Health
- The Science of Cooking Food
- Food Provenance and Food Waste
- Food Spoilage
- Cultures and Cuisines
- Technology Technological Developments
- Factors Affecting Food Choice.

Practical Skills will include:

- Measuring and working out amounts of ingredients.
- Cutting or combining a variety of different materials.
- Using the oven, grill, microwave and other new high profile equipment .
- Cook different dishes by applying medium and low levelled skills
- Using various utensils and cooking equipment
- Modifying ingredients to create a desired outcome.