

Design and Technology

What is our Curriculum Area Vision?

Provide students the opportunity to develop practical skills and technical knowledge needed to design innovative solutions to real world scenarios.

How does our Curriculum Area meet the Academy's 6 Curriculum Core Principles

Is anchored in our Christian Values

Through the process of iteration, students learn to be empathetic, persistent and resilient. They are encouraged to lead and work collaboratively to develop successful outcomes.

Is fully inclusive and celebrates diversity

Our curriculum challenges stereotypes in STEM subjects by looking at the work of others and encouraging students to develop empathy for the needs and wants of the end user.

Values all subjects, both core and creative, academic and vocational

Our curriculum provides students with the skills needed to apply their theoretical understanding taught in other subjects through the development of innovative and creative products.

Develops students' ability to be resilient, reflective, resourceful and responsible learners

Students work independently to solve social and environmental challenges. This requires them to be resourceful, reflective and responsible designers.

Provides pathways for academic success

Students are equipped with practical skills and theoretical understanding to engineer innovative solutions.

Prepares students beyond knowledge and skills to be successful in tomorrow's world

Students explore the possibilities of emerging technologies, whilst thinking critically about the moral and ethical impacts on society.

What are we trying to achieve at KS3

- *Reflect on the social, cultural and environmental impact of products in order to design sustainable solutions.*
- *Engage students by exploring the physical and working properties of materials and ingredients*
- *A foundation in practical skills*
- *Understanding of links with other STEM subjects and possible careers*
- *Exposure to technological developments in design and manufacturing*

What are we trying to achieve at KS4

- *Deeper understanding of the implications products have on society and the environment in order to manufacture ethical solutions.*
- *Ability to work independently to both design and manufacture prototypes*
- *Marketable solutions to the needs and wants of users.*
- *Ability to apply relevant scientific and mathematical concepts*

- *Experimenting with new technologies to implement within their NEA.*

What are we trying to achieve at KS5

- *A full understanding of a wide range of technical content, approaches to design and industry.*
- *Experience of working with a variety of materials and technologies to test and manufacture high quality prototypes*
- *Integrating STEM knowledge independently.*

What makes our curriculum offer unique & local?

- *Students learn to use a range of tools, equipment and machinery, however our curriculum is responsive to new developments in technology, science and engineering providing students with cutting edge skills. This will enable them to succeed beyond GCSE into industry.*
- *All students learn about the impact of emerging technologies and to embed intelligence in products.*
- *Students explore future career pathways by working with STEM ambassadors, industry partnerships and leading universities.*
- *All students have the opportunity to achieve the CREST Discovery Award - a nationally recognised STEM certificate from the British Association.*
- *Work on the Food School Matters initiative supported by Wholefoods Fulham*

What is our KS3 Vision?

At KS3 students investigate real world context focusing on practical skills, ingredients, materials and manufacturing techniques to design innovative solutions to real world problems.

Students will:

- *reflect on the social, cultural and environmental impact of products in order to design sustainable solutions.*
- *Engage students by exploring the physical and working properties of ingredients and materials*
- *Develop a foundation in practical skills whilst working safely*
- *Understand the links with other STEM subjects and possible careers paths*
- *Be exposed to technological developments in design and manufacturing*

What is our USP (Unique Selling Point)?

- *Students learn to use a range of tools, equipment and machinery, however our curriculum is responsive to new developments in technology, science and engineering providing students with cutting edge skills. This will enable them to succeed beyond GCSE into industry.*
- *All students learn about the impact of emerging technologies and to embed intelligence in products (this includes robotics, 3D printing)*
- *Students explore future career pathways by working with STEM ambassadors, industry partnerships and leading universities.*

- *All students have the opportunity to achieve the CREST Discovery Award - a nationally recognised STEM certificate from the British Association.*
- *From KS3, all students have the opportunity to prepare and apply for the prestigious Arkwright Engineering Scholarship in year 11.*
- *All students develop confidence using a wide range of equipment and utensils. Whilst learning /improving a wide variety of cooking skills and techniques. In turn developing an understanding of good food hygiene, food provenance and preventing food poisoning*

What is studied in Key Stage 3?

3Cert Design and Technology Curriculum Overview (2021-2022) (Current Yr 7)

	Core Topic	Year 7	Year 8	Year 9
HT1	New and Emerging Technologies	Electrical Engineering: Introduction to electronics, systems and control, programming	Robotics Design: Types of robots, automation, robot articulation, mechanism and ethical issues	Advanced Workshop Skills: Design Movements Research skills Brief and Specification Manufacturing a quality prototype Orthographic presentation
HT2	Mastering Practical Skills	Introduction to the Workshop skills: Materials categories, timber sources and origins, FSC	Intermediate Workshop skills: Mixed material, wood joinery, reuse/ recycling materials, plastic origins, plastic forming	
HT3	Working as a Designer/Engineer	Design Innovation: Structures, forces, loads, modeling, user needs, contextual problem solving for a London context	Design Innovation: Biomimicry, iterative process, modeling, user needs, contextual problem solving for a global context.	Advance Drawing and CAD/CAM Skills: Onshape Isometric: Isosketch
HT4	Mastering Drawing and Communication	Introduction to Formal Drawing and CAD/CAM skills: Using 2D Design, - link to CAMM (laser cutter), isometric (simple shapes, basic products)	Intermediate Formal Drawing and CAD/CAM skills: Using TinkerCAD (plus coding), 3D printing	
HT5&6	Food and Nutrition	Introduction to Food and Nutrition: Basic food preparation (cutting, weighing, measuring, ingredients), food safety and hygiene, Eatwell Guide, balanced diets and nutritional needs.	Intermediate Food and Nutrition Food and Society Food choice, ethical and moral influences global cuisine, seasonality, food and environment, labeling and marketing.	Advanced Food and Nutrition: Food Science Chemical and functional properties of ingredients (fats, proteins and carbohydrates) and raising agents

Students will study 5 units in a different order depending on which class they are in. They rotate each term, working with a specialist D&T teacher.

They are assessed formally at the end of each term with a written summative exam paper and marked on their practical outcomes. Students complete a mid-term review during each unit, which are self/peer assessed similarly to a mock before their end of term assessment.

Students also receive verbal feedback throughout the practical making tasks.