Park Vale
Academy

Design & Technology at Park Vale Academy

Design & Technology at Key Stage 3

- **Year 7's:**
  Timbers, polymers and metal theory including designing and making a multi material coat hook.
- **Year 8's:**
  Cover a combination of design skills including research and graphic design plus a timber based angled lamp project with an electronics element.

Design and technology is an inspiring, rigorous and practical subject. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science and engineering. Pupils learn how to become resourceful and independent problems solvers.

During years 7 and 8 students will:

Design

- identify and solve their own design problems and understand how to reformulate problems given to them
- use a variety of approaches [for example, biomimicry and the work of others] to gain knowledge of historical products and new technologies.
- develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations

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 othersto develop and broaden their understanding
- investigate new and emerging technologies
- practice, evaluate and refine their practical skills
- understand developments in design and technology, including material categories) , its impact on individuals, society and the environment.

Technical knowledge

- understand and use the properties of materials
- apply Computer Aided Design and Manufacture in school based and commercial manufacturing.

Design & Technology and Engineering at Key stage 4

- Current Year 10 (2021) and 11 (2020) students are completing the AQA GCSE in Design & Technology.
- Current Year 9 (2022) students (and options from year 8 for 2023 onwards) are studying the Level 1 / 2 Cambridge Certificate in Engineering Design.

GCSE Design & Technology

Design & Technology seeks to prepare students to participate confidently and successfully in an increasingly technological world; and be aware of, and learn from, wider influences on design and technology, including historical, social/cultural, environmental and economic factors.

The GCSE in Design and Technology will enable students to understand and apply the iterative design processes through which they will explore, create and evaluate a range of outcomes. This course will enable students to use creativity and imagination to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values.

This qualification will also provide the opportunity for students to apply knowledge from other disciplines, including mathematics, science, art and design, computing and the humanities.

Assessment

The course comprises of 50% assessment through written examination and Non-examined assessment (course work) making up the remaining 50%

Course Content

The course is broken down into three main elements, Core technical principles, Specialist technical principles and Designing and making principles. Each of these 3 elements are assessed in the end of course exam and the Design & Make task.

During year 9 students will focus of building the knowledge, understanding and skills or materials and practical processes. The aim of this is to prepare them fully for the Non Examined Assessment in years 10 and 11 and exam in year 11. Students will put together a portfolio of practical skills alongside a design and make task during year 9, all with the aim of developing and embedding practical skills and understanding.

The topics below are covered in detail throughout years 10 and 11**.**

- Real-world contexts, representing contemporary issues and concerns
- Focus on needs, wants and values of individuals and groups, leading students to address problems and/or opportunities
- Critical evaluation of new and emerging technologies
- Developments in modern and smart materials, composite materials and technical textiles
- How electronic systems provide functionality to products and processes
- The use of programmable components
- Types and properties of the following materials: Including Paper and Board, Timber, Metals, Plastics and textiles.

Level 1 / 2 Cambridge Certificate in Engineering Design.

The Level 1 / 2 Cambridge Certificate in Engineering Design echo's the process of the initial engineering processes in industry. Students are required to develop a range of skills that they would normally develop in the work place. The course allows students to run with their creativity and develop a number of products relating to a specific design brief. Cambridge National in Engineering Design helps students understand the processes of engineering design and how market requirements inform client briefs. Through practical activities they develop skills in computer modelling and model making and how to communicate design ideas effectively.

Assessment

The course comprises of 25% assessment through written examination and 3 assessed assignments each worth 25%.

Course Content

Controlled assessment

The controlled assessment is split into 3 units;

- Product analysis and research – Students will research existing solutions and assess the development of engineered products. Students will develop dextrous skills and gain practical experience of product assembly and disassembly to appreciate manufacturing processes, design features and materials used.
- Developing and presenting engineering designs: students will generate design ideas using a mixture of detailed hand rendering and computer-based presentation techniques including computer aided design in 2 and 3 dimensions.
- 3D Design realisation – This unit requires learners to apply practical skills to produce a prototype product or model using craft-based modelling materials alongside computer controlled or rapid-prototyping processes. Learners will produce a prototype product in the form of a model and test design ideas in a practical context. All of this work will be presented in a concise design folder and a high quality 3D product, current weighting of students controlled assessment mark counts towards 75% of the overall grade.
- 1 hour written examination – written paper currently counts towards 25% of a student's overall grade. Students will be required to discuss a number of techniques as well as be able to recall material properties and their uses. Students must pass the written paper to pass the full course and gain their final grade and certificate.

The course is awarded as Distinction, Merit or Pass (levels 1 or 2)