Park Vale Academy
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www.parkvaleacademy.org.uk

Headteacher: Mr S Bowhay

Design & Technology at Park Vale Academy

Design & Technology at Key Stage 3

During years 7 and 8 learners rotate between Design & Technology and Food & Nutrition.

Design & Technology

- **Year 7's:**
  Experience a wide range of fun and exciting projects that teach valuable knowledge and skills in the workshop, understanding different materials and how they work. Timbers, polymers & CADCAM including designing and making a CAD Light Switch Surround, CAD Clock Project and Wooden Robot.

- **Year 8's:**
  Work in more depth on projects, honing practical skills, improving resilience & problem solving whilst developing independence in the workshop. Knowledge covers a combination of design skills including research and CADCAM including designing and making a CAD Drawing Set and an electronics Night Light Project.

Food and Nutrition

- **Year 7's:**
  In Year 7 learners will develop basic understanding of nutrition and culinary skills. Focusing on Food Safety, Culinary Skills, Heat transfer, Commodities, Nutrition and Food choice.

- **Year 8's:**
  In Year 8 learners will develop confidence of cooking a range of dishes and make informed decisions about food choice. Focusing on Nutrition, Food Poisoning, Food Choice and Culinary Skills.

Design and technology is an inspiring, rigorous and practical subject. Learners acquire a broad range of subject knowledge and draw on various disciplines to learn how to become resourceful and independent problems solvers.

Design & Technology and Engineering at Key stage 4

- Currently KS4 learners are studying the Level 1 / 2 OCR Cambridge Nationals in Engineering Design.

During year 9 students will focus of building the knowledge, understanding and skills of 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.

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Level 1 / 2 Cambridge Certificate in Engineering Design.

OCR Cambridge National in Engineering Design will inspire and equip learners with the confidence to use skills that are relevant to the sector and the wider industry.

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.

As part of the Cambridge National, learners cover:

- How designs are developed including what information is needed and how manufacturing influences design
- Communicating designs using sketches, drawings and computer aided design (CAD), producing accurate and detailed drawings and models
- How designers create and test models to make a working prototype
- Making your own high-quality models to represent design ideas

Course overview

The OCR course is made up of three units with each contributing to the final grade at the end of year 11.

Unit R038: 40%(Examined Unit) **Principles of Engineering Design**

In this unit, students will learn about the different design strategies and where they are used, as well as the stages that are involved in iterative design, which is currently one of the most widely used design strategies. They will learn about the type of information needed to develop a design brief and specification, and the manufacturing and other considerations that can influence a design. Students will develop knowledge of the types of drawing used in engineering to communicate designs, as well as the techniques used to evaluate design ideas and outcomes, including modelling methods.

Topics include:
o Designing processes
o Designing requirements
o Communicating design outcomes
o Evaluating design ideas

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Unit R039: 30%(NEA) **Communicating Designs**

In this unit, students will learn how to develop their techniques in sketching, and gain industrial skills in engineering drawing using standard conventions that include dimensioning, line types, abbreviations, and representation of mechanical features. Students will enhance their confidence and capabilities by using computer aided design (CAD), 2D and 3D software, to produce accurate and detailed drawings and models that visually communicate their designs.

Topics include:
o Manual production of freehand sketches
o Manual production of engineering drawings
o Use of computer aided design (CAD)

Unit R040: 30%(NEA) **Design Evaluation and Modelling**

In this unit, students will learn how designers can quickly create and test models to develop a working prototype of a design. They will develop their virtual modelling skills using computer aided design (CAD) 3D software, to produce a high-quality model that will be able to simulate their design prototype. Students will also develop their physical modelling skills using modelling materials or rapid-prototyping processes to produce a physical prototype.

Topics include:
o Product evaluation
o Modelling design ideas

Career Opportunities
The subjects provide a wealth of careers opportunities. These include using the qualification to go straight into employment or modern apprenticeship in engineering, construction work, mechanics, electricians etc. or following the course through to degree level at a university. This higher qualification – BSc, BA - can then lead onto careers such as aeronautical engineering, media and film design, graphic design, CAD/CAM, marketing, project planning, and teaching, to name just a few.

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