

# DESIGN TECHNOLOGY KS4



**Maths, EIM**

## How do I design to meet a user's requirements?

- Who can be a client?
- How can I gather information about my client?
- How do I research my client?
- What are hardwoods and softwoods?
- What is timber and how is it grown responsibly?
- How can I use isometric and other drawing techniques to communicate my designs and ideas?
- How can I safely use hand tools and machines to produce a finished product?
- How can I join timbers using different fixings?
- What is sustainability?
- How can I reuse materials?



**RSPB Newtown Creek, Isle of Wight to find out about the features of bird boxes**

## Bat Doctor to find out about the housing needs of bats

**Maths**

## How can I use CAD/CAM to manufacture a quality product?

- What is CAD/CAM?
- How can I use CAD and CAM to model my designs?
- How do I 'plan up' for manufacture to save waste?
- How can I include pre-existing and pre-manufactured items into my design?
- How can I manufacture within a tolerance?
- What is a laser cutter?

**Local primary school to test our products**

**YR10**

**Maths, Science**

## What is a casting mould?

- What is a ferrous and non-ferrous metal?
- What are the properties of metals?
- How can I include surface detail to a cast product?
- How do I prepare a CAD/CAM file for manufacture?
- How can I use PPE to be safe when working with materials?
- How can I use CAD/CAM to produce a 3-dimensional metal outcome?
- What are mould layers?
- How can I ensure a quality of finish on my products?
- What are the qualities of a finished metal product?



**CECamm, East Cowes**

## What are the qualities of cardboards and papers?

- What are different types of cardboard and papers?
- What is the process of printing on lightweight materials?
- What are the qualities of recycled cardboards and papers?
- How can I use typography within design?
- What graphic skills and rendering can I use to explain my ideas and designs?
- How can I use research of existing products to help in the design process?
- How can I design a product to meet a need?



**Biltmore Printers, Newport, IOW**

## What modifications can be made to improve the use of an existing product?

- What shapes help sound amplify?
- When can I use models and prototypes to test my ideas and designs?
- How do I include information about existing products into the design process?
- What are Art and Design movements?
- How can I refer to/acknowledge Art and Design movements in my designs?
- How can I use modelling/prototyping at 1:1 to show my ideas and designs?
- How can I combine and join materials in 3-dimensions?
- How can I use layers to shape materials and make a 3-dimensional outcome?
- What is a quality of finish for timber?

## How can I manufacture a flat pack product?

- How can I gather information about a range of users?
- What is a design context?
- How can I use anthropometric data?
- What is an ergonomist?
- What is a scale model or prototype?
- How can I join materials without fixtures and fittings?
- How can I model and prototype my ideas using lightweight materials?
- How can I visualise a three-dimensional object in two dimensions?



**IKEA, Southampton**

## Investigate, Design, Make, Evaluate

You will respond independently to a design context continuing into Year 11.



**YR11**

### Investigate

#### How can I investigate a design context?

- What is a design context?
- Why do I collect information about my client?
- Who is my client?
- What are the needs of my client?
- What problems have I identified within the design context?
- What is primary and secondary research?
- How can I use research to help identify the problems within a design context?

### Design

#### What do I do to support designing effective products?

- How can I use the information from a design problem to generate a design solution?
- How can I use sketches and drawings to communicate my design ideas?
- What is the design process?
- What is a product life cycle?

### Make

#### What are the processes involved in modelling, prototyping to generate a final product?

- What is a prototype?
- Why do I make models at scale?
- What is a 'proof of concept' model?
- How can I use CAD/CAM to produce a physical product?
- How do I compare hand tools and CAD/CAM?
- How can I shape materials?
- What is a quality finish for a product?
- What is Quality Assurance and Quality Control?
- How can I safely use tools?
- How can I combine materials?

### Evaluate

#### What is an effective evaluation?

- How you I use a specification to evaluate my final outcome?
- When is it important to get the view of a client?

### Exam preparation

- How can I make sure I am revising effectively for this subject?
- How do I memorise and recall knowledge I need for the exam?
- How do I maximise marks in this subject's exam?
- What are the gaps in my knowledge and how can I address them?
- How do I approach exam questions in this subject to ensure I reach the highest grade?
- What do I need to do to prepare myself for Sixth Form courses?

### BRIDGING UNITS

- How can I design to solve problems? Identify a design problem and research existing products are there that have tried to solve the problem before
- How can I design using the style and the influence of other designers? Create a timeline of influential designers over the last two centuries
- How can I effectively test materials strength, resistance to corrosion and degradation?
- How can I work within and test the mechanical and physical properties of materials?

**KS5**