

### Year 7 (Key Stage 3)

#### *Hand tool*

- Develop knowledge and understanding of the core knowledge relating to metals theory i.e. sources of metals, classifications
- Develop an understanding of key health & safety rules for safe working practice within D&T workshops
- Develop practical aptitude and knowledge of tools, equipment and processes when manufacturing an engineering product from metals

#### *Maze game*

- Develop knowledge and understanding of the key concepts relating to how electronic components and mechanical devices are used to provide functionality and movement within a range of systems and mechanisms.
- Investigate a range of strategies that can be used to generate and communicate design ideas
- Develop practical understanding of relevant materials, tools, equipment and processes to use when creating prototypes of ideas.

### Year 8 (Key Stage 3)

#### *Systems and mechanisms*

- Develop knowledge and understanding of the key concepts relating to how mechanical devices are used to provide functionality and movement within a range of systems and mechanisms.
- Investigate a range of strategies that can be used to generate and communicate design ideas
- Develop practical understanding of relevant materials, tools, equipment and processes to use when creating prototypes of ideas.

#### *Systems and programming*

- Develop knowledge and understanding of the key concepts relating to how electronic components are used to provide functionality and movement within a range of systems.
- Investigate a range of strategies that can be used to create and refine programs that control components and functions within systems.
- Develop practical understanding of relevant programming software, component types, and fault finding techniques that can be used when creating functioning electronic systems.

### Year 9 (Key Stage 3)

#### *Clock project 1: Design ideas (Main focus: GCSE course preparation)*

- Develop knowledge and understanding of the properties and characteristics of key material groups.
- Develop practical understanding of relevant tools, equipment and processes to use when working with materials efficiently.
- Develop knowledge and understanding of the key concepts relating to how designers explore a context to identify and investigate design possibilities.
- Investigate a range of strategies that can be used to generate and communicate design ideas

#### *Clock project 2: Design realisation (Main focus: GCSE course preparation)*

- Use the iterative design process to evaluate and refine realised design ideas.

- Apply knowledge and understanding of the properties and characteristics of key material groups in realisation of final design idea.
- Apply practical understanding of relevant tools, equipment and processes to use when working with materials efficiently.

*USB lamp (Main focus: Engineering course preparation)*

- Develop knowledge and understanding of the key concepts relating to understanding Technical Drawings, Specifications, Manufacturing Plans and Quality Control
- Utilise a range of practical skills for working with mixed materials.

Year 10 and 11 (Key Stage 4)

*GCSE Design and Technology*

- Identify, investigate and outline design possibilities to address needs and wants.
- Design and make prototypes that are fit for purpose.
- Analyse and evaluate design decisions and outcomes, and wider issues in design and technology.
- Demonstrate and apply knowledge and understanding of both technical principles and designing and making principles.

*Engineering Design Level 1 / 2 Award*

- Design briefs, design specifications and user requirements
- Product analysis and research
- Developing and presenting engineering designs
- 3D design realisation

Year 12 and 13 (Key Stage 5)

*A-level Design and Technology*

- Identify, investigate and outline design possibilities to address needs and wants.
- Design and make prototypes that are fit for purpose.
- Analyse and evaluate design decisions and outcomes, and wider issues in design and technology.
- Demonstrate and apply knowledge and understanding of both technical principles and designing and making principles.