Year: 4 **Program of Study:** Electrical systems – Simple circuits and switches.

N.C POS:

- *Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.*
- *Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams and prototypes.*
- *Select from tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing] accurately.*
- *Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.*
- *Investigate and analyse a range of existing products.*
- *Evaluate their ideas and products against their own design criteria.*
- *Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].*

Concept: technology, impact, legacy, change, inventions, innovation, application, cause and effect.

Key Vocabulary: series circuit, fault, connection, toggle switch, push-to-make switch, push-to-break switch, battery, battery holder, bulb, bulb holder, wire, insulator, conductor, crocodile clip, control, program, system, input device, output device, user, purpose, function, prototype, design criteria, innovative, appealing, design brief.

Prior Learning: Constructed a simple series electrical circuit in science, using bulbs, switches and buzzers. Cut and joined a variety of construction materials, such as wood, card, plastic, reclaimed materials and glue.

Core Knowledge- non-negotiable

<u>Designing</u>

- Gather information about needs and wants and develop design criteria to inform the design of products that are fit for purpose, aimed at particular individuals or groups.
- Generate, develop, model and communicate realistic ideas through discussion and, as appropriate, annotated sketches, cross-sectional and exploded diagrams.

<u>Making</u>

- Order the main stages of making.
- Elect from and use tools and equipment to cut, shape, join, and finish with some accuracy.
- Select from and use materials and components, including construction materials and electrical components according to their functional properties and aesthetic qualities.

<u>Evaluating</u>

- Investigate and analyse a range of existing battery-powered products.
- Evaluate their ideas and products against their own design criteria and identify the strengths and areas for improvement in their work.

Wider Influences

- Homes
- Travel and holidays
- Cities

- Emergency vehicles
- School
- Business
- Enterprise
- Light and dark

Enduring Understanding

- Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.
- Apply their understanding of computing to program and control their products.
- Know and use technical vocabulary relevant to the project.