|  |  |  |
| --- | --- | --- |
| Year 6 | | |
| KS2 National Curriculum Objectives | | |
| When designing and making, pupils should be taught to:  **Design**   * 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, prototypes, pattern pieces and computer-aided design   **Make**   * select from and use a wider range of 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   **Evaluate**   * investigate and analyse a range of existing products * evaluate their ideas and products against their own design criteria and consider the views of others to improve their work * understand how key events and individuals in design and technology have helped shape the world   **Technical knowledge**   * apply their understanding of how to strengthen, stiffen and reinforce more complex structures * understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages] * understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]   apply their understanding of computing to program, monitor and control their products. | | |
| Year 6 Key Skills | | |
| Autumn Term | Spring Term | Summer Term |
| **Structures** |  | **Electrical Systems** |
| **Design**   * Develop a simple design specification to guide the development of their ideas and products, taking account of constraints including time, resources and cost. * Generate, develop and model innovative ideas, through discussion, prototypes and annotated sketches.   **Make**   * Formulate a clear plan, including a step-by-step list of what needs to be done and lists of resources to be used. * Competently select from and use appropriate tools to accurately measure, mark out, cut, shape and join construction materials to make frameworks. * Use finishing and decorative techniques suitable for the product they are designing and making.   **Evaluate**   * Investigate and evaluate a range of existing frame structures. * Critically evaluate their products against their design specification, intended user and purpose, identifying strengths and areas for development, and carrying out appropriate tests. * Research key events and individuals relevant to frame structures.   **Technical knowledge**   * Understand how to strengthen, stiffen and reinforce 3-D frameworks. * Know and use technical vocabulary relevant to the project. |  | **Design**   * Develop a design specification for a functional product that responds automatically to changes in the environment. * Generate, develop and communicate ideas through discussion, annotated sketches and pictorial representations of electrical circuits or circuit diagrams.   **Make**   * Formulate a step-by-step plan to guide making, listing tools, equipment, materials and components. * Competently select and accurately assemble materials, and securely connect electrical components to produce a reliable, functional product. * Create and modify a computer control program to enable their electrical product to respond to changes in the environment.   **Evaluate**   * Continually evaluate and modify the working features of the product to match the initial design specification. * Test the system to demonstrate its effectiveness for the intended user and purpose.   **Technical knowledge**   * Understand and use electrical systems in their products. * Understand the use of computer control systems in products. * Apply their understanding of computing to program, monitor and control their products. * Know and use technical vocabulary relevant to the project. |
| Year 6 Vocabulary | | |
| Modelling, Compression, Strut, Tension, Tie, Horizontal, Vertical, Triangulation, Frame structure |  | Program, Microcontroller, Light emitting diode (LED), System, Output devices, input devices, Process |