Curriculum Overview – DT – Systems / Electronics. **Design Technology is taught as a carousel in KS3. Across the 3 year groups there are units of Food, Electronics, Resistant materials, Graphic Design and Robotics. The Robotics module runs in Year 7 and adds to the learning for Systems & Electronics Yr 7 Robotics Scheme of Work**
The curriculum covers all aspects of the NC and schemes of work ensure skills and knowledge are built upon throughout KS3.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/239089/SECONDARY_national_curriculum_-_Design_and_technology.pdf and KS3 Audit 2019 All Subject Areas
In Electronic Systems & Control pupils will learn the fundamentals of the design and making of circuits that improve or solve a situation in which a systems approach can be applied. The learning across key stage 3 meets the requirement of the National Curriculum and includes the use of a solutions based approach to micro-electronics. During the optional years the knowledge is widened to meet the specification of the level 2 qualification. The learning at all stages is led in a theory/simulate/test/manufacture environment
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	Theory	Practical
Year 7	Introduction to systems design. Components used within a transistor circuit that responds to a sensor/change in environment. Potential divider circuit to switch on an output device- colour changing LED. Understanding of electronics in society, impact, materials, components, tools, equipment, testing, quality control and assurance. Evaluation. Electronics KS3\7_Electronics_SoW_2019.htm	Safe use of tools and equipment. Circuit board assembly and manufacture. Drilling of PCB's. Populating PCB and soldering of components. Attaching off-board components switches, sensors, LED's. Using test equipment. Assembly of an enclosure using a variety of materials. Final product finishing and testing reliability, performance, safety and quality.
Year 8	Pupils will learn about timers, counters and decoders. How a monostable and astable timer functions by changing passive component values. Design of circuits to learn about input components (switches/sensors), and output devices. Adding a decade / binary / decoder to create a two-process circuit. Electronics KS3\8_Electronics_SoW_2019.htm	Simulation and testing of systems using Circuit Wizard. (Weeks 1-3) Prototyping and testing of circuits on breadboard (Week 4-5) Populating and soldering of components to project board PCB (Week 6-8)
Year 9	A microcontroller approach to systems design. Led by a design situation pupils will learn how control a closed loop system and program a PIC to respond to multiple inputs and control a series of outputs including LED's, audio, LCD displays, motors, servo's, actuators. Electronics KS3\9_Electronics_SoW_2019.htm	Simulation and testing of microcontroller circuits by the use of flowchart and basic programming. Downloading of programs to project boards to demonstrate and test in real-life. Pupils will be able to build their project as a prototype on a project board PCB
Year 10	Electronic Principles – Voltage, current, resistance Operating principles of Components Input-Process-Output Test methods for circuits – Hazards and fault finding	Commercial circuit construction methods - PCB Use CAD for simulation and design – Circuit Wizard To be able to construct & test circuits - Bread Board /PCB
Year 11	How computers are used in design, manufacture & process control How computers are used in maintenance of engineering systems How computers are used to communicate & use data for production and maintenance	Understand the application and operation of microcontrollers in engineering To design, develop, simulate a control system solution To be able to test control systems in engineered processes