Key Stage 4 Design & Technology Sequence of Work Year Wooden Automata Toys for learning In the style of Year 11 NEA is set by AQA. Students work to address a non-examined assessment context. LED Lighting When designing and making in Year 10, students are taught: Core technical principles New & emerging technologies Industry, Enterprise, Sustainability, People, Culture, Society, Environment, Production techniques & systems. Evaluation to inform design decisions Energy generation and storage Fossil fuels, Nuclear power, Renewable energy, Energy storage systems including batteries **Developments in new materials** Modern materials, Smart materials, Composite materials, Technical textiles Systems approach to designing Inputs, Processes, Outputs **Mechanical devices** Different types of movement, Changing magnitude and direction of force Materials & their working properties Material categories – Papers & boards, Natural and manufactured timbers, Metals and alloys, Polymers, Textiles, Material properties Specialist technical principles Selection of materials or components In relation to at least one material category or system Forces and stresses Materials and objects can be manipulated to resist and work with forces and stresses, Materials can be enhanced to resist and work with forces and stresses to improve functionality Ecological and social footprint Ecological issues in the design and manufacture of products, The six Rs, Social issues in the design and manufacture of products, **Sources and origins** In relation to at least one material category Using and working with materials Properties of materials, The modification of properties for specific purposes, How to shape and form using cutting, abrasion and addition, Stock forms, types and sizes In relation to at least one material category or system Scales of production In relation to at least one material category or system Specialist techniques and processes The use of production aids, Tools, equipment and processes, How materials are cut shaped and formed to a tolerance, Commercial processes, Quality control Surface treatments and finishes In relation to at least one material category or system **Designing and making principles** Investigation, primary and secondary data Use primary and secondary data to understand client and/or user needs, How to write a design brief and produce a design and manufacturing specification, Carry out investigations in order to identify problems and needs Environmental, social and economic challenge The work of others **Design strategies** Generate imaginative and creative design ideas using a range of different design strategies, Explore and develop their own ideas **Communication of design ideas** Prototype development **Selection of materials and components Tolerances** Material management Cut materials efficiently and minimise waste, Use appropriate marking out methods, data points and coordinates

Specialist tools and equipment

Specialist techniques and processes Surface treatments and finishes