

Subject	D&T Materials	Year Group	10		
	Term/Unit 1&	Term/Unit 2	Term/Unit 3 & 4 - A full term	Term/Unit 5	Term/Unit 6
<b>Scheme title</b>	D&T and our world & Speaker project	Smart and modern materials & Speaker project	Mechanisms & Mechanical toy mock NEA	Manufacturing techniques 'skills development'	NEA Begins
<b>Purpose of scheme</b>	D&T and our world topic is part of the GCSE courses core technical principles. Pupils will learn this topic with an assessment at the end. In year 10 pupils have one lesson of theory followed by a lesson of practical work, right the way through the academic year. The practical project is a practice NEA and pupils will design, develop, manufacture and test a Small speaker.	D&T and our world topic is part of the GCSE courses core technical principles. Pupils will learn this topic with an assessment at the end. In year 10 pupils have one lesson of theory followed by a lesson of practical work, right the way through the academic year. The practical project is a practice NEA and pupils will design, develop, manufacture and test a small birdhouse.	Mechanisms is quite a detailed and complex element of the core technical principles. The mechanisms unit covers levers, gears, pulleys, forces, types of motion, linkages, cams and followers. To assist with this, pupils complete another mock NEA, this time on the theme of mechanisms. Pupils will research, design, manufacture and test a mechanical toy. Pupils will complete theory and their mock NEA in alternative lessons.	On June the first, GCSE D&T pupils are given the contextual challenges by the exam board and will then begin their NEA. This term is the last opportunity to develop some final techniques and prepare pupils for the demands of the NEA. This also feeds into the specialist technical principles which pupils must know for the exam (Component 1). The specialist technical principles will be revisited in the Summer of year 11.	
<b>Knowledge in sequence</b>	D&T and our world theory followed by an assessment. This includes 'new and emerging technologies' and the 'environment and sustainability'. Alongside the theory work, pupils will research, design, manufacture and test and fully functioning birdhouse. The project is a scaled down version of the NEA, but pupils will begin working on A3 sheets, similar to sketchbook work and product working models using the laser cutter. These skills will be very useful when starting their NEA later in the year.	Smart and modern materials theory followed by an assessment. This includes 'new and emerging technologies' and the 'environment and sustainability'. Alongside the theory work, pupils will research, design, manufacture and test and fully functioning birdhouse. The project is a scaled down version of the NEA, but pupils will begin working on A3 sheets, similar to sketchbook work and product working models using the laser cutter. These skills will be very useful when starting their NEA later in the year.	Pupils will learn to identify, explain and where appropriate, calculate the following mechanisms in the following sequence: Forces, motions, levers, gears, pulleys, linkages, cams and followers. The mock NEA completed in alternative lessons will be centred around the use of cams and followers. As with the previous mock NEA, pupils will be required to analyse the task, develop a design brief and gather appropriate research. Pupils will then design, develop and manufacture a mechanical toy before testing and evaluating it.	Pupils will work through the following knowledge. Which techniques are suitable for when manufacturing with timber, what tools are required, what is the relevant H&S associate with the said techniques, what are the appropriate adhesives, joining methods and finishes for working with timber, what CAD/CAM methods can be used when working with timber. In addition, pupils will learn how to organise practical evidence by uploading images to google drive and adding them to slideshows, this is essential for starting their NEA.	
<b>Skills</b>	Designing a brief, Producing a task analysis, conducting appropriate research, designing and developing ideas, using CAD, modelling, manufacturing and testing.	Designing a brief, Producing a task analysis, conducting appropriate research, designing and developing ideas, using CAD, modelling, manufacturing and testing.	Designing a brief, Producing a task analysis, conducting appropriate research, designing and developing ideas, using CAD, modelling, manufacturing and testing. Applying the necessary maths to calculate sums based around mechanical devices.	Skills include laser cutting, making housing joints, lap joints, comb joints and applying different types of finish to timber.	
<b>Key words</b>	New and emerging technology/ biometrics/ VR/ AI/ robotics/ sustainability/ social footprint/ carbon footprint/ ecological footprint/ The 6 R's/ renewables/ fossil fuels/ 3D printer/ biodiversity	Modern materials/ smart materials/ thermochromic/ hydrochromic/ electrochromic/ polymorph/ shape memory alloy/ QTC/ ELW/ ELF/ Phoschous metal clay/ Photochromic/ Kevlar/ Carbon fibre/ Graphene/ Nanomaterials	Gear, gear train, fulcrum, pivot point, RPM, leverage, compression, linkage, mechanical advantage, load, newtons, force, rotary, linear, reciprocating, oscillating, tension, Cam, follower, dynamic load, idle	Housing joint, lap joint, comb joint, bridle joint, biscuit joint, square haunch mortice and tenon joint, halving joint,	
<b>End point</b>	Pupils will have covered a unit of the courses theory content. This content will be revisited in year 11 in more depth and closer to the examination.	Pupils will have covered a unit of the courses theory content. This content will be revisited in year 11 in more depth and closer to the examination.	Pupils will have covered a unit of the courses theory content. This content will be revisited in year 11 in more depth and closer to the examination.	Pupils will have covered the vast majority to the core technical principles by this point. They will also have some understanding of the specialist technical principles, meaning pupils can work on their NEA until February half term.	
<b>Assessment Methods</b>	Question paper completed at the end of the unit.	Question paper completed at the end of the unit.	Question paper completed at the end of the unit.	Photograph portfolio of samples as a record	