

Topic: Year 10 Design and Technology in the 21 st Century - Electronic systems and programmable components		Duration: SPR1		Composite:		
Key vocabulary:		Core knowledge Components		Powerful knowledge components crucial to commit to long term memory		
Electronics Systems, Input Process, Control Output, Device Programmable Component, Embed Functionality Enhance, Customise Subsystem Integrated circuit Signal, Sensor Interfacing Analogue, Digital Circuit Iteration Manufacture Prototype		<p>Core knowledge must cover the following:</p> <ul style="list-style-type: none"> • <i>understanding design and technology practice, •understanding user needs, •writing a design brief and specifications, •investigating challenges, •developing ideas, •investigating the work of others, •using design strategies, •communicating ideas</i> • <i>developing a prototype, •making decisions</i> <p>Section 5) How do electronic systems provide functionality to products and processes, including sensors and control devices to respond to a variety of inputs, and devices to produce a range of outputs? Section 6) What are the use(s) of programmable components that embed functionality into products in order to enhance and customise their operation? NEA practice – Make element - • <i>communicating ideas</i> • <i>developing a prototype, •making decisions (explain iterative process)</i></p>		<ul style="list-style-type: none"> • Inputs are a means to entering information or commands to a system. • Outputs are what are produced once the data or information has performed it's task. • Specific inputs and outputs are..... • A Programmable component allows operations to be carried out without human interaction. • Cruise control along with others is a successful idea that has been adopted by ALL car manufacturers worldwide. What else can you think of? 		Links to previous electronics topic in year 8. Will link to year 11 NEA research and component 1 revision. Link to real world jobs Test – Exam style questioning from previous Eduqas exam papers and sample documents.
Impressive reading		Impressive speaking		Impressive writing		
<ul style="list-style-type: none"> • Be able to break down complex exam questions and realise what answer is needed. 		<ul style="list-style-type: none"> • Be able to phrase / explain in simplistic form, what electronic systems entail showing understanding of any advantages and disadvantages. 		<ul style="list-style-type: none"> • Be able to write a coherent and factual answer to a complex 6 mark exam question. 		
				Resilience		
				Learning the workings and purpose of a flow chart, where they are used, how common they are and the ability to then write students own version that works. These are vulnerable to failure if student does not persevere for perfection programming.		
				Employability via:		
				Logistical and methodical thinking. Understanding the concept of 'what you put in – you will get out' Effort / Accuracy = Success. Independent thinking Collaborative system designing Discuss paid jobs like 'Setting up temporary traffic lights at road maintenance sites'		
SEND						
<ul style="list-style-type: none"> • Technology : www.technologystudent.com Eduqas GCSE resources page - https://resources.eduqas.co.uk/Pages/ResourceByArgs.aspx?subId=8&lvlId=2 Dynamic learning subscription with Eduqas online DT package 						

- **Multi-sensory approach using:** Logicator software for programming systems to reflect real world scenarios – For example traffic lights
- **Repetition of key vocabulary in every lesson**
- **Display spellings of key vocabulary** and sound them out when addressing technical terminology to make sure pronunciation is explicit.
- Texts used/alternative texts available with a consideration to reading age

Topic: Design and Technology in the 21 st Century - Mechanical components and devices				Duration: SPR 2	Composite:
Key vocabulary:	Core knowledge Components			Powerful knowledge components crucial to commit to long term memory	Links to previous and future topics
Function, Mechanical Mechanism, Movement Motion, Oscillating Rotary, Linear Reciprocating, Force, Lever Amplify, Axis, Calculation Magnitude, Fulcrum, Effort Load, Lever, Linkage, Gear, CAM, Crank, Slider, Rack & Pinion, Iteration, Finish, Surface preparation, Proto-type	<p>Core knowledge must cover the following:</p> <ul style="list-style-type: none"> •understanding design and technology practice, •understanding user needs, •writing a design brief and specifications, •investigating challenges, •developing ideas, •investigating the work of others, •using design strategies, •communicating ideas •developing a prototype, •making decisions <p>Section 7)</p> <p>What are the functions of mechanical devices that produce different sorts of movement and that change the magnitude and direction of forces?</p> <p>Input-process-output (Relate to ‘needs’ in a train station – use Bitesize website for this)</p> <p>Amplification includes : Types of movement, Mechanical systems, Lever & Linkages, CAMS & Followers, Gears, Belt drives, Rack & Pinion)</p> <p><u>Mathematical areas of focus:</u></p> <ol style="list-style-type: none"> 1. Arithmetic and numerical computation 2. Handling data 3. Graphs 4. Geometry and trigonometry <p><u>Scientific areas of focus:</u></p> <ol style="list-style-type: none"> 5. Use scientific vocabulary, terminology and definitions 6. Life cycle assessment and recycling 7. Using materials <p>NEA practice – Finish element - •developing a prototype, •making decisions (explain iterative process)</p>			<p>*Oscillating- move or swing back and forth in a regular rhythm.</p> <p>*Rotary - (of motion) revolving around a centre or axis; rotational.</p> <p>*Linear - arranged in or extending along a straight or nearly straight line.</p> <p>*Reciprocating - (of a part of a machine) move backwards and forwards in a straight line.</p> <ul style="list-style-type: none"> • Distance = speed x time (Draw up pyramid revision diagram) <p>All other mathematic equations.</p> <p>Students MUST be able to relate to WHY these systems exist and WHERE they exist – (Real world scenarios) – Delivered through amplification.</p>	<p>Links to Physics, Maths, Year 8 topic, Year 9 mechanical systems</p> <p>Lays foundation for year 11 core knowledge questioning</p> <p>Test – Exam style questioning from previous Eduqas exam papers and sample documents.</p>
Impressive reading	Impressive speaking	Impressive writing	Resilience	Employability via:	
• Students will be able to read and portion up the technical language used in	• Students should read out loud the definitions of the technical language regularly for recall.	• Students will be able to write coherent	Problem solving through Mathematics.	Methodical thinking, problem solving, Learning about programming in the world of work and how it affects our every day lives without realising it. Independent working	

exam style questions to allow processing.		answers to exam style questions		Collaborative working.
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Dynamic learning subscription with Eduqas online DT package
<https://www.bbc.co.uk/bitesize/guides/zhq8jty/revision/1> - video included (2:29)
http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2016-17/16-17_1-4/website/media/eduqas-dandt-maths.pdf
- **Multi-sensory approach using**: physical examples of CAMS and Followers and objects with different motions.
- **Repetition of key vocabulary in every lesson.**
- **Display spellings of key vocabulary** and sound them out when addressing technical terminology to make sure pronunciation is explicit.