



Engineering
Year 10 & 11
Curriculum Journey

Subject: GCSE Engineering		
Year group: 10		Exam Board: AQA
	Content	Department Assessment
Autumn Term 1	<p>Electronics and electrical principles</p> <p>Students will be introduced to: Electrical principles, e.g. Ohms law, resistance, potential dividers.</p> <p>Electronics components and how they function in circuits. Designing (using a Systems approach), constructing, and testing electronic circuits. Looking at circuit design in terms of input, process, output</p>	Assessment will be through Homework and end of term tests
Autumn Term 2	<p>Using a circuit design package and simulation package eg Circuit Wizard, Picaxe editor</p> <p>Physical, modelling, using prototyping board for circuit construction and testing.</p> <p>Working with metals. Students will learn about: workshop processes</p> <ul style="list-style-type: none"> • cutting • turning • drilling 	
Spring Term 1	<p>Quality control methods, working to tolerances, checking using Vernier calipers/micrometer. Following production plans.</p> <p>Understanding materials such as: Students will learn about: Polymers, types and properties Composites and reinforcements Timber: structural grade timber, selection and testing, uses Ceramics: advantages and disadvantages Heat treatment of metals. Avoiding corrosion and finishes: Make it go faster?</p> <p>Introduction to the aerodynamic concept of thrust, drag and lift and applications.</p>	

<p>Spring Term 2</p>	<p>Production methods, automation, robotics and their social impact. The environment/pollution in cities, visual impact in the countryside. Making a casting/moulding sand casting , terminology, incl. Building a bridge Calculating factor of safety, weight/load ratio, destructive testing</p>	<p>Assessment will be through Homework</p>
<p>Summer Term 1</p>	<p>Systems: building a small robot Short task using a combination of mechanical and electronic devices, applying knowledge and understanding about: Sensing, using sensors (as available) to detect and measure. Mechanisms: Transmitting power using shafts, gearing systems, belts and pulleys, chains and sprockets. Linkages, push-pull, bell crank, cranks and four bar mechanisms including crank-slider, parallel motion cams and bearings. Pneumatics: single and double acting cylinders, control and check valves.</p>	<p>Short engineered project</p>
<p>Summer Term 2</p>	<p>Mock exam Revision and exam preparation starts Planning for the NEA Problem solving Using a logical and systematic approach to designing Analysing and evaluating existing solutions to problems</p>	<p>Monitoring coursework and providing generic feedback</p>
<p>Homework</p>	<p>Homework will be set weekly, depending upon the modules being taught</p>	
<p>Subject / Department KeyTerms</p>	<p>PEE (Point.Evidence.Explain); WISE (Write.identify.Substitute.Ensure) 123, FLE(Fulcrum, Load, Effort); Iterations; SCAMPER(Substitute, combine, adapt, modify, put to other uses, eliminate, rearrange) cope, drag, pourer, riser, factor of safety; Stress, Strain and Young’s modulus; FoS- factor of safety; PIC-peripheral interface controller.</p>	
<p>Recommended Reading / Viewing</p>	<p>My Revision Notes: AQA GCSE (9-1) Engineering Student eTextbook; Paul Anderson, David Hills-Taylor; ISBN: 9781398315297; AQA GCSE (9-1) Engineering Paperback – 29 Mar. 2018; Paul Anderson (Author), David Hills-Taylor (Author), Mark Griffiths (Contributor)</p>	
<p>How can technology help in this subject?</p>	<p>Internet: -research and investigation. CAD – Designing and simulating: circuits; mechanisms and products CAM- for programming CNC machinery to produce products. BBC micro/RaspberryPi /arduino/ -controlling devices.</p>	

Skills required to succeed in this subject...	Problem solving skills; Good English, Mathematical, Coding, investigative, an ability to use tools and equipment safely and accurately; Computer literacy
Vision for this subject...	<p>Pupils will develop their understanding of engineering and go on to study a level 3 engineering or product design course, leading to a career in engineering or designing.</p> <p>This course will provide pupils with skills valued by engineering employers and so it will help pupils towards attaining an engineering, or an allied field, apprenticeship.</p>

Subject: GCSE Engineering

Year group: 11

**Exam Board:
AQA**

	Content	Department Assessment
Autumn Term 1	<p>NEA problem description & analysis and specification. Methods of developing ideas. Drawing Techniques Generating design ideas – circuits, systems blocks; including Testing and evaluation. Looking at Mocks-ups and Models Design Development, Mock-ups and Models. Circuits and system blocks; Testing and evaluation. Materials and their properties. Looking at detailing of the solution and producing production drawings - CAD Production of Orthographic Drawings / Production drawing and cutting list Revision-Manufacturing techniques</p>	<p>Coursework monitoring throughout. Providing generic feedback as/per the qualification requirements.</p>
Autumn Term 2	<p>Revision-Manufacturing, Measuring and comparator tools/ mechanical systems/structures Revision-Electronic Systems Y11 AUTUMN EXAMS Production of Orthographic Drawings / Production drawing and cutting list Developing a Manufacturing Specification / Developing Gantt Chart for Planning Production planning Assembly of Materials.</p>	<p>November Mock exam Coursework monitoring throughout. Providing generic feedback as/per the qualification requirements.</p>
Spring Term 1	<p>Production Suggested production methods (alternative methods to manufacture), processes and techniques for making the final outcome Final Hand in (completed CW folder with final Testing and evaluation)</p>	<p>Coursework monitoring throughout. Providing generic feedback as/per the qualification requirements</p>
Spring Term 2	<p>Exam Revision Final Coursework Marks Given</p>	

<p>Summer Term 1</p>	<p>Exam Revision Final Exam</p>	
<p>Homework</p>	<p>Homework will be the reworking of specific pieces of coursework as directed by the teacher.</p>	
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<p>How can technology help in this subject?</p>	<p>Internet: -Investigating and researching iterations CAD – Designing and simulating: circuits; mechanisms and products CAM- for programming CNC machinery to produce products.</p>	
<p>Skills required to succeed in this subject...</p>	<p>Problem solving skills; Good English, Mathematical, Coding, investigative, CAD Draughting skills.</p>	

Vision for this subject...	<p>Pupils will develop their understanding of engineering and go on to study a level 3 engineering or product design course, leading to a career in engineering or designing.</p> <p>This course will provide pupils with skills valued by engineering employers and so it will help pupils towards attaining an engineering, or an allied field, apprenticeship.</p>
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