Space Studio West London
an Aspirations Academy

GCSE Engineering (AQA) - Curriculum Plan

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10 curriculum overview	**Engineering Materials** 1.1 Materials and their properties 1.2 Material costs and supply 1.3 Factors influencing design of solutions	**Systems (Part 1)** 3.1 Describing systems 3.2 Mechanical systems 3.3 Electrical systems x	**Systems (Part 2)** 3.4 Electronic systems 3.5 Structural systems 3.6 Pneumatic systems	**Testing and Investigation** 4.1 Modelling and calculating 4.2 Testing 4.3 Aerodynamics	**Impact of Modern Technologies & Practical Engineering Skills** 5.1 The impact of modern technologies 6.1–6.10 Practical engineering skills	**Engineering Manufacturing Processes** 2.1 Additive manufacturing 2.2 Material removal 2.3 Shaping, forming and manipulation 2.4 Casting and moulding 2.5 Joining and assembly 2.6 Heat and chemical treatment 2.7 Surface finishing
Key knowledge outcomes (students should know)	Understand the classification, properties and behaviour of engineering materials. Explain how material costs, availability and sustainability influence	Understand how engineering systems are represented using block diagrams, schematic diagrams and flowcharts. Explain the operation and application of	Understand the operation of electronic, structural and pneumatic systems. Explain how different engineering systems work together to produce	Understand engineering modelling techniques, mathematical calculations, testing methods and aerodynamic	Understand how modern technologies are transforming engineering industries. Develop knowledge of engineering	Understand the principles, applications and limitations of additive manufacturing, machining, shaping, casting,

	engineering decisions. Understand how design requirements, maintenance, product lifespan and environmental considerations affect engineering solutions.	mechanical and electrical systems in engineering products.	reliable and efficient engineering solutions.	principles. Explain how testing is used to validate engineering performance, reliability and product quality	drawings, schematics, CAD/CAM, CNC manufacturing, production planning, quality control, material selection, process selection and engineering testing.	joining, heat treatment and surface finishing. Explain how manufacturing processes are selected according to material properties, product requirements and production methods.
Key skills (students should be able to)	Identify engineering materials and select appropriate materials for specific engineering applications. Compare material properties, evaluate material costs and justify material selection using engineering evidence.	Interpret engineering drawings and system diagrams. Analyse the operation of mechanical and electrical systems and explain how inputs, processes and outputs interact within engineering systems.	Analyse electronic, structural and pneumatic systems. Interpret engineering diagrams and evaluate how integrated systems meet design and operational requirements.	Apply engineering calculations and modelling techniques. Conduct engineering tests, record and interpret results, evaluate performance and make evidence-based recommendations for improvement.	Produce engineering drawings and schematics using recognised standards. Use CAD/CAM software, prepare production plans, select suitable materials and manufacturing processes, apply quality control techniques and evaluate the impact of modern engineering technologies.	Select appropriate manufacturing processes for engineering materials. Demonstrate safe workshop practice, manufacture engineering components using suitable processes, apply finishing techniques, inspect product quality and evaluate manufacturing outcomes against engineering specifications.
Year 11 curriculum	**Practical Engineering**	**Practical Engineering**	**Practical Engineering**	**Preparing for**	**GCSE Engineering**	**Progression &**

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overview	Skills – NEA (Research & Planning) 6.1 Problem solving 6.2 Engineering drawings and schematics 6.3 CAD, CAM and CNC 6.5 Production plans	Skills – NEA (Manufacture & Quality) 6.4 Testing materials 6.7 Select and use materials, parts and components 6.8 Select and use appropriate processes 6.9 Apply quality control methods	Skills – NEA (Testing & Evaluation) 6.6 Predict performance using calculations and modelling 6.10 Design tests to assess fitness for purpose and performance Completion of NEA	Assessment 7.1 The written paper Revision of Chapters 1–6 Exam practice and retrieval	Examination Final revision, exam preparation and written examination	Transition Post-exam engineering projects, Level 3 Engineering preparation, STEM enrichment and careers
Key knowledge outcomes (students should know)	Understand the client brief, identify stakeholder requirements, carry out research, develop design ideas, produce engineering drawings and prepare realistic production plans using recognised engineering standards.	Understand how materials, tools, components and manufacturing processes are selected to meet design requirements. Apply quality control procedures throughout manufacture and modify designs where appropriate.	Understand how engineering products are tested against specifications, analyse performance using engineering evidence, evaluate outcomes and recommend justified improvements before completing the NEA portfolio.			
Key skills (students should be able to)	Analyse engineering problems, generate and communicate design solutions, produce engineering drawings and CAD models, and develop structured production	Manufacture engineering components safely, select appropriate engineering processes, inspect products against specifications, apply quality	Conduct engineering tests, collect and interpret data, evaluate engineering solutions against design criteria and produce well-structured			

	plans.	assurance and maintain accurate engineering records.	technical evaluations supported by evidence.			
Year 12 curriculum overview(AAQ)						
Key knowledge outcomes (students should know)						
Key skills (students should be able to)						
Year 13 curriculum overview(AAQ)						
Key knowledge outcomes (students should know)						
Key skills (students should be able to)						

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Assignment and Assessment Timeline – Year 10

Term	Assessment Activity
October	
December	
January	
March	
May/June	
Summer 1	
Summer 2	