

Year 10: AQA GCSE Engineering

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topics	1-Engineering materials 6-Practical engineering skills Focus: Knowledge and understanding of engineering material. Identify materials based on their physical appearances and properties/ characteristics	2-Engineering manufacturing processes 6-Practical engineering skills Focus: Knowledge and understanding of different manufacturing processes and techniques. Demonstrate appropriate for specific materials and how these processes would be carried out.	3-Systems 6-Practical engineering skills Focus: Knowledge and understanding of the use and role of the electronic and mechanical systems within engineering settings.	4-Testing and investigation 5-The impact of modern technologies 6-Practical engineering skills Focus: Knowledge and understanding of a range of testing and investigation methods. Apply relevant mathematical calculations when engineering a solution.	NEA Mock 6-Practical engineering skills Focus: Draw on knowledge and understanding of engineering to apply the practical skills to a problem.	NEA Mock 6-Practical engineering skills Focus: Draw on knowledge and understanding of engineering to apply the practical skills to a problem.
Assessments	Topic Test: Properties Cost Supply Designs	Topic Test: Additive manufacturing Material removal Shaping Casting Joining Finishing Coating	Topic Test: Mechanical Electrical Electronic Structural Pneumatic Mock Exam: Topics 1, 2, 3 and 6	Topic Tests: Modelling Costing/ Calculating Testing Aerodynamics Modern technologies	Mock NEA: Investigation into context of a problem. Mock Exam: Topics 1-6	NEA planning, research and production in line with AQA Guidelines. Away from Point of learning: Mock Exam covering all elements of theory this year.
Building on Prior Learning	<p>Declarative Knowledge Engineering is rich in complex knowledge and something which has been built over time. Prior knowledge of KS3 and KS4 Design Technology topics enables knowledge of how engineering is used purposefully, this is 'empowering knowledge' Knowledge of engineering contexts explains how techniques, materials, concepts are used in the modern world and will enable students at Trinity to create products for briefs.</p> <p>Disciplinary/procedural Knowledge Engineering provides a context for the use of engineering in society. Students will be able to focus on how engineering elements are used in different sectors and describe the methods/techniques and rationale used to create products such as household item, emergency equipment and educational toys.</p>					
Cultural Capital	<p>There is cultural capital in abundance in this programme of study: Computing education is considered to be important, because it has social, cultural and economic benefits. Through computing education, pupils can learn 'powerful knowledge', enabling them to become informed and active participants in our increasingly digital society. Students at Trinity build knowledge in this area by being taught about different contexts over time but also by revisiting these contexts and adding new knowledge to what they already know about them. In addition to learning about the contexts themselves, students should learn the knowledge that links them together. This includes knowledge of the technologies that enable such contexts, the laws that constrain their use and the ethical considerations when technology intersects with society.</p>					
Mastery	<p>Engineering is all about problem solving and efficiency. Problem solving is a difficult skill to learn and requires a certain mindset which can be difficult for students to adapt to. Theory and understanding of materials, tools and technology for example, underpin the ability of being able to create a concept/idea which can then be prototyped and produced.</p>					
Development of Character	<p>A wide range of virtues are covered through the teaching of Engineering: As our culture is becoming more diverse, it is important students learn to appreciate and understand the need create solutions and to solve problems. It is also important that students explore the consequences of using technology and manufacturing processes and their lasting effect on the environment.</p>					
Extra-Curricular opportunities	STEM Club/ AutoCAD club/ Meaningful employer involvement – Millennium Point speakers.					
Metacognitive Learning	<p>In Engineering, there are so many ways to solve problems, execute an idea, or complete a task. Exercising metacognition allows students to think about different ways to solve a problem and choose the best possible solution for their chosen brief. By using knowledge, they can adapt to the given brief based on prior learning. Self-regulation is key when completing the NEA, students will ensure retrieval and effective learning strategies are implemented during their interleaved revision throughout exam preparation.</p>					

