Topic: Year 10 Design and Technology in the 21st Century - Design and Technology and our world.		**Duration: AUT 1**	**Composite:**
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Emerging Industry Enterprise Sustainability People, Culture Society Environment Production Techniques Systems, Power Generation Storage Global Impact Fossil fuels, Finite, Brief, Specification	***Core knowledge must cover the following:*** *•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* Section 1) What are the impacts of new and emerging technologies on: • industry, • enterprise, • sustainability, • people, • culture, • society, • the environment, • production techniques, • systems Section 2) How does critical evaluation of new and emerging technologies inform design decisions? Section 3) How is energy generated and stored in order to choose and use appropriate sources to make products and to power systems? NEA practice – Research element - *•understanding design and technology practice, •understanding user needs, •writing a design brief and specifications, •investigating challenges,*	1) Technology continues to be developed for manufacturing processes in order to improve quality and speed of making, while maintaining customer satisfaction. 2) Companies are trying to save money, improve products, develop new materials and become more efficient. New technologies are developed to positively impact the manufacturing industry and society. 3) Energy generation and storage have a huge global impact on our lives - from decisions about the use of fossil fuels and their effect on our environment, to the development of cleaner, more-modern ways to create and store energy. *Students will be able to know*	Links to Year 9 Environmental issues module and Year 10 AUT2 – Section 4 - Developments in modern and smart materials, composite materials and technical textiles. Test – Exam style questioning from previous Eduqas exam papers and sample documents.

Impressive reading	**Impressive speaking**	**Impressive writing**	**Resilience**	**Employability via:**
• Being able to understand the way in which exam questions are written and produce answers coherent to the content.	• Being able to present information to a group of people.	• Using information collected through research, students will write a clear and coherent design brief and specification.	Develop students ability to recall information and display understanding of the technical terms.	Good presentation, Confidence, Ability to communicate thoughts, ideas and opinions clearly.

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- **Repetition:** Knowledge based questions are asked throughout the lesson and a question at the start of each lesson about the previous Design and Technology experiences / likes / dislikes and preferences of materials.
- **Key vocabulary :** This is introduced at the start of the topic and lesson, followed with 'THINK HARD' questioning.
- **Technology :** www.technologystudent.com, Eduqas GCSE resources page - https://resources.eduqas.co.uk/Pages/ResourceByArgs.aspx?subId=8&lvlId=2
  Technology support in relation to the three Core knowledge questions:
  1) https://www.bbc.co.uk/bitesize/guides/zn4bcj6/revision/1
  2) https://www.bbc.co.uk/bitesize/guides/zn4bcj6/revision/9
  3) https://www.bbc.co.uk/bitesize/guides/zf8ck2p/revision/3
  3) https://www.youtube.com/watch?v=gR-A68Q0rZo – DT with MR C
  Dynamic learning subscription with Eduqas online DT package

- **Cultural capital:** Section 1 – Research – Looking at the past / present work of companies and professional worldwide.

Topic: Year 10 - Design and Technology in the 21st Century – Smart materials		**Duration: AUT2**	**Composite:**
Key vocabulary:	**Core knowledge Components**	**Powerful knowledge components crucial to commit to long term memory**	**Links to previous and future topics**
Development Engineered Properties Nano-scale Thermochromic Pigment Polymer Alloy Hydrogel Composite Combination Fibre Particle Smart Modern Technical Textiles Investigating Design Strategy Communication	***Core knowledge must cover the following:*** *•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* Section 4) a) What are the developments in modern and smart materials? b) What are the developments made with composite materials? c) What the developments made in technical textiles? NEA practice – Design element - *•developing ideas, •investigating the work of others, •using design strategies, •communicating ideas*	**a) Modern materials** Traditional materials are those that have been in use for centuries, such as paper, wood, stone and metals. We have also developed modern materials, which can be used alongside them. A modern material is a material that has been engineered to have improved properties. **Smart materials:** The use of nano-scale particles is relatively new, and it is still unclear what their long-term effect might be on health and the environment. Smart materials include thermochromic pigments, shape memory polymer, shape memory alloy and hydrogels. **b) Composite materials** Composite materials are made up of different materials which are combined to improve their properties. They can be a combination of natural and synthetic materials but fall into three main categories: fibre-based composites, particle-based composites, sheet-based composites. **c) Technical textiles** Developments in science and engineering lead to changes in materials technology. There are a range of modern materials with impressive properties, as well as traditional ones such as wood or metal.	Links to Yr 10 AUT1 – Design, Technology & our world and SPR1 – Electronic systems and functionality. Test – Exam style questioning from previous Eduqas exam papers and sample documents.

Impressive reading	**Impressive speaking**	**Impressive writing**	**Resilience**	**Employability via:**
• To be able to navigate through the websites highlighted as they provide ALL key information covering ALL areas of NEA work and exam preparation.	• Students should read out loud the definitions of the technical language regularly for recall.	• Be able to write clear and concise 6 mark exam answers.	Students will be able to use knowledge of these types of materials to design a new or modify an obsolete existing product. Failure during product testing will encourage resilience and iteration surrounding the products success.	Good presentation, Confidence, Ability to communicate thoughts, ideas and opinions clearly. A greater understanding of the meanings behind some technical language,

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- **Key vocabulary :** This is introduced at the start of the topic and lesson, followed with 'THINK HARD' questioning.

- **Technology :** www.technologystudent.com
  Eduqas GCSE resources page - https://resources.eduqas.co.uk/Pages/ResourceByArgs.aspx?subId=8&lvlId=2
  Technology support in relation to the three Core knowledge questions:
  a) https://www.bbc.co.uk/bitesize/guides/zfq8jty/revision/1
     https://www.bbc.co.uk/bitesize/guides/zfq8jty/revision/2
  b) https://www.bbc.co.uk/bitesize/guides/zfq8jty/revision/3
  c) https://www.bbc.co.uk/bitesize/guides/zn67xfr/revision/3
     This link covers both smart materials and technical textiles : https://www.youtube.com/watch?v=EOEzdjjFz44&feature=youtu.be (18:06)
  Dynamic learning subscription with Eduqas online DT package
- **Multi-Sensory approach using –** games and tactile objects to investigate.