Cornwallis Academy
Ambitions for All

SMILE
SUCCESSFUL | MOTIVATED | INSPIRED | LEARNING | EXCITED & ENGAGED

Year 10 Design and Technology

Core Technical Principles

Learning Objectives

Students will learn:

- new and emerging technologies
- energy generation and storage
- developments in new materials
- systems approach to designing
- mechanical devices
- materials and their working properties.

This topic mainly covers section A of the examination but is also relevant in the NEA work

What previous knowledge is required?

Students will learn all three topic areas throughout year 10 revisiting areas that have been taught through KS3. They will have some previous knowledge of some areas and there is cross over from both science and maths at KS3 and KS4.

How will this term's content help with future learning?

We teach this topic throughout year 10 and build times in for retrieval. This is taught in stand alone theory lessons and through examination practice. This topic's learning will be needed for the examination and for any further learning at level 3 in design and technology or similar creative subjects.

Common Misconceptions

Students lack of understanding surrounding renewable and non renewable energy.
Students struggle with the volume of information on such a wide range of materials, manufacturing, machinery to name a few. We try to provide students with a breath of knowledge but also create a balance to not overload with too much content and no time for retrieval.

National Curriculum / Specification

3.1 Core Technical principles AQA Design and Technology specification
GCSE Design and Technology 8552 | Specification | Subject Content | Core Technical Principles | AQA

Specialist Technical Principles

Learning Objectives

Students will learn:

- selection of materials or components
- forces and stresses
- ecological and social footprint
- sources and origins
- using and working with materials
- stock forms, types and sizes
- scales of production
- specialist techniques and processes
- surface treatments and finishes.

This topic mainly covers section B of the examination but is also relevant in the NEA work.

What previous knowledge is required?

Students will learn all three topic areas throughout year 10 revisiting areas that have been taught through KS3. They will have some previous knowledge of some areas and there is cross over from both science and maths at KS3 and KS4.

How will this term's content help with future learning?

We teach this topic throughout year 10 and build times in for retrieval. This is taught in stand alone theory lessons and through examination practice. This topic's learning will be needed for the examination and for any further learning at level 3 in design and technology or similar creative subjects.

Common Misconceptions

Students struggle to answer the long-answered questions which have a higher mark weighting. Time for planning is built in and modelling answers by staff.
Students struggle with the volume of information on such a wide range of materials, manufacturing, machinery to name a few. We try to provide students with a breath of knowledge but also create a balance to not overload with too much content and no time for retrieval.

National Curriculum / Specification

3.2 Specialist technical principles AQA Design and Technology specification.
GCSE Design and Technology 8552 | Specification | Subject Content | Specialist Technical Principles | AQA

Designing and making principles

Learning Objectives

Students will learn:

- investigation, primary and secondary data
- environmental, social and economic challenge
- the work of others
- design strategies
- communication of design ideas
- prototype development
- selection of materials and components
- tolerances
- material management
- specialist tools and equipment
- specialist techniques and processes.

This topic mainly covers section C in the exam but is also relevant in the NEA work

What previous knowledge is required?

Students will learn all three topic areas throughout year 10 revisiting areas that have been taught through KS3. They will have some previous knowledge of some areas and there is cross over from both science and maths at KS3 and KS4.

How will this term's content help with future learning?

We teach this topic throughout year 10 and build times in for retrieval. This is taught in stand-alone theory lessons and through examination practice. This topic's learning will be needed for the examination and for any further learning at level 3 in design and technology or similar creative subjects.

Common Misconceptions

Students find relevant analysis of products difficult and often repeat themselves losing valuable marks in the exam. Difficulties with the maths sections on the exam for those in lower maths sets,
Students struggle with the volume of information on such a wide range of materials, manufacturing, machinery to name a few. We try to provide students with a breath of knowledge but also create a balance to not overload with too much content and no time for retrieval.

National Curriculum / Specification

3.3 designing and making principles
GCSE Design and Technology 8552 | Specification | Subject Content | Designing And Making Principles | AQA

Practice Non-Exam Assessment Project

Learning Objectives

A01 – identify, investigate and outline design possibilities
A02 – Design and make prototypes that are fit for purpose

A03 – Analyse and Evaluate
What previous knowledge is required?
Students need a previous basic skill in practical work especially with the materials they choose to work with Students will also have a previous knowledge of some of the skills required in the paperwork sections. They will have completed designing, developing, planning, researching and evaluating throughout KS3.
How will this term's content help with future learning?
This NEA work will help students develop skill for working independently on project work, will help them to learn how to problem solve and if they continue with this subject in level 3 courses they will use similar skills.
Common Misconceptions
Students do not communicate effectively with their client. Students do not give enough time to their practical project, which even though only one tenth of the final mark, is the most time-consuming part of the project. Students do not test their products or evaluate them in enough detail mainly due to time constraints.
National Curriculum / Specification
4.4 Non exam assessment **A01 –** identify, investigate and outline design possibilities **A02** – Design and make prototypes that are fit for purpose **A03** – Analyse and Evaluate GCSE Design and Technology 8552 | Specification | Scheme Of Assessment | AQA