

GCSE Design and Technology

Timber technology and drawing techniques

- Develop understanding of manufacturing methods.
- Know the material properties of woods and manufactured boards.
- Use traditional drawing techniques to produce an orthographic engineering drawing.
- Understand the range of timber joints that can be used.
- Practise making a range of joints to improve practical skills.
- Oblique, isometric drawing and perspective drawing techniques, including the use of colour markers to render drawings.

Engineering and the environment

- Understand the concepts of market pull and technology push.
- Study and understand the advantages and disadvantages of different energy sources, both renewable and non-renewable.
- Understand the importance of sustainability and consideration of ecological issues in manufacturing.
- Know the 6Rs and the significance of each.

Practical project: timber

- Research and design a timber storage product to meet a design brief.
- Be able to identify tools and equipment that will be needed.
- Apply drawing techniques from earlier in the year to produce a series of drawings leading to a 2D CAD.
- Apply a range of practical skills to the manufacture of the product, and evaluate the outcome.
- Understand the theory and practical application of different finishes.
- Research a designer or manufacturing company for a presentation.

Polymer technology and mechanical systems

- Understand the properties and function of polymers and composite materials.
- Understand the uses of technical textiles and associated manufacturing techniques involved in their production.
- Know the different types of motion, lever classes and mechanisms (including gear trains, cams, cranks) in mechanical systems.
- Be able to make mathematical calculations of velocity ratios, output speeds and loads.

Non-exam assessment (NEA) project

- Complete research for project based on design brief.
- Apply knowledge from this research to the production of a range of designs using methods practised earlier in the course.
- Use 3D CAD software (Strata CX) to create a virtual, photorealistic model.
- Use design work to complete resistant material modelling.
- Further study of microelectronic components to enable students to identify a range of components and understand their function.
- Further study of material properties of metals and associated manufacturing techniques, the 6Rs and technical textiles in relation to project.
- Understand the concepts of ergonomics and anthropometrics, applying this to project where relevant.
- Produce engineering drawings of the final design.
- Produce production plans for manufacturing the product to the design specification, showing consideration of quality control, time and equipment restrictions.
- Apply practical skills from across the course to the manufacture of the product, completing a 'making diary' at each stage.
- Written evaluation and write up of the full process.

**Advice to students
for independent
study**

- Test yourself at the end of each unit by using exam board questions which can be accessed on the school server and also on the AQA website.
- Read through theory notes weekly to help you retain information.