

# GCSE - DESIGN TECHNOLOGY

In Key Stage 4 Design & Technology lessons students have 5 lessons a week, one triple lesson and a double lesson. For the most part the triple lesson will focus on project based work (a combination of design, make and design and make tasks), the double will cover theory work and prepare students for the terminal written exam paper. This reflects the 50/50 assessment split for the 1-9 Design and Technology GCSE. Knowledge, understanding and skills are delivered as part of projects and theory units. Whilst a distinction is helpful for summary in actuality theory content is planned in projects and design/making in theory schemes.

## Year 10

Project/NEA	Theory
<p><b>SKILL BUILDER</b> Students undertake a making focussed project to develop their practical skills. They learn to apply QA/QC when making and use a new range of tools and equipment. The unit help support the Timbers theory work, encompassing tools, processes, traditional joints and wood finishes. Students also use CAD/CAM with a greater focus on functionality rather than aesthetics. Scales of manufacture are also considered. The materials used will be similar to those in KS3 but expectations of accuracy will be higher with students expected to work with growing independence.</p> <p><b>MINI NEA</b> The project is a research, design and model project. Students will start with a design challenge and identify a problem from this starting point. They will identify a target market and a user and will research existing products. Students will be introduced to a range of new ideation techniques and will develop ones used in KS3 projects. This will encourage variety and originality of ideas as well as avoiding design fixation. A brief and specification will be written, developing the specifications produced in KS3 to consider a wider range of criteria. This can then be used to more explicitly evaluate ideas, models and outcomes. Designs will be developed through modelling and by the work of other designers, researched by students. The project uses an amplifier circuit allowing delivery of electrical systems content and providing the opportunity to design around components.</p> <p><b>CAD/CAM</b> Use of CAD Fusion 360 and CAM 3D printing developing KS3 CAD skills. Covers working to tolerances and use of ICT in design and manufacture.</p>	<p><b>TIMBERS</b> Students begin studying timbers. This is the most familiar material area from KS3 studies. This links with the Skill Builder project and also allows us to cover properties, sourcing and sustainability. This is one of the specialist technical areas selected as it is the main material used in College.</p> <p><b>POLYMERS</b> Polymers are studied as the second of the specialist technical areas. This gives students better scope to consider mass production of products and the associated processes. A series of focussed practical tasks incl. vacuum forming, line bending and CAD/CAM injection moulds enhancing other knowledge and skills.</p> <p><b>SUSTAINABILITY</b> Builds upon issues covered in timbers and polymers to consider wider sustainability issues, incl. 6Rs to consider designers and manufacturers wider impact and responsibilities.</p> <p><b>PEOPLE, CULTURE &amp; SOCIETY</b> Beyond sustainability students consider other social and moral considerations throughout the life cycle of products, terminology and concepts already familiar from sustainability. Also consider why products evolve with the impact of technology and study the work of two companies linking to the fashion and trends in society. Students also undertake a user centred ergonomic design task drawing on design skills and allowing consideration of the role of modelling</p> <p><b>SMART &amp; MODERN MATERIALS</b> A further material area that links with technological developments. Develops on materials properties knowledge and understanding of materials and processes e.g. use of TS polymers when moulding GRP.</p>
<p><b>NEA: PLANNING &amp; RESEARCH</b> The NEA tasks for the specification are released in the May before certification. The NEA task can therefore be started at the end of the mock exam period. Students begin by exploring the contexts issued by the exam board to identify a design problem. The research section explores the problem further including identifying a suitable user/client and analysing relevant existing products.</p>	<p><b>MOCK EXAM</b> Students sit a mock exam covering materials covered in Year 10 to date. Knowledge and understanding sufficient to cover range of question types.</p> <p><b>MECHANICAL SYSTEMS &amp; MATHS SKILLS</b> The final Year 10 unit of study is largely maths based. Students further practice maths based questions as covered throughout the course. Mechanical systems covers topics incl. forces, levers, MA and gear ratios.</p>

Term	Project/NEA	Theory
1	Skill builder - timber	Timbers
2	Skill builder - plastic	Polymers
3	Mini NEA – research and design	Smart and Modern Materials, Electronic systems
4	Mini NEA – development and models	Sustainability, People, Culture and Society
5	CAD CAM	Mechanical Systems
6	NEA: Planning and research	Mock Exam