



Design Technology Year 10

Curriculum Intent

The focus of Design and Technology is to enable students to approach ideas in both a literal and lateral manner, providing them with the skills to effectively communicate ideas, designs and processes in a professional manner to industry standard. Students will use their knowledge of Maths and Science and apply it to their work to create both their own designs as well as a commercially viable product. Students will be introduced to a varied diet of tools and machinery that is commonplace in the design industry, developing skills which will eventually allow them to complete GCSE projects.

Design and Technology | Theory

Students will learn:-

Students should have a detailed knowledge of the following core principles:

- New and emerging technologies.
- Energy generation and storage.
- Developments in new materials
- Systems approach to designing
- Mechanical devices
- Materials and their working properties.

GCSE Criteria 3.3 Designing and making principles

- 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.

What does excellence look like?

- Explain in detail and apply to real world situations. Displaying an understanding of how industry works.
- Students can answer in detail big mark question applying their knowledge and able to provide examples to support their statements.
- Students can apply their knowledge to correctly identify exam questions and NEA.



Knowledge, Understanding & Skills

Know

- Students to gain a solid knowledge of core principles in detail to be able to apply this knowledge to their NEA project as well as confidently answer Section A and B in their written exam.
- Students to be apply this knowledge across all specialisms at a foundation level.

Apply

- Apply knowledge and recall information in examinations and apply relevant information in NEA (Controlled assessment).
- Make choices in their NEA based on their specialist knowledge and iterate their choices based on this.
- Interpret information provided to decide on the suitability/potential of both primary and secondary data when researching for their NEA.
- Apply knowledge of design strategies and the work of others to coursework.

How is homework used to enhance learning?

- Students are provided differentiated theory activities and theory related homework.
- Students are provided graded exemplars for most activities.
- Students are provided assessment criteria's for assessment activities in booklets.
- Lunch time and afterschool clubs are encouraged to further aid students on a one to one basis.

H/W – further research (developing research and extended writing skills)

Practice exam questions relating to the core theory knowledge.

How will we assess impact?

- Recapping knowledge with plenary and starter activities
- End of unit testing
- Peer and self-assessment
- Written evaluation of project work



Design and Technology | Drawing Skills

Students will learn:-

Develop, communicate, record and justify design ideas using a range of appropriate techniques such as:

- freehand sketching, isometric and perspective
- 2D and 3D drawings
- system and schematic diagrams
- annotated drawings that explain detailed development or the conceptual stages of designing
- Crating, isometric drawings.
- Drop shadows and shading.
- Contouring to add form to rounded forms.

What does excellence look like?

- Creative drawing skills
- Technical drawing skills
- Literal and lateral thinking and translation into design skills
- Communication of ideas through both 2D and 3D drawings
- Orthographic drawing skills.
- Exploded drawing skills.
- Effective rendering
- Effective presentation skills with the use of colour.

How is homework used to enhance learning?

- Students are provided with exemplar.
- Isometric grids
- Students use step by step guidance to develop new drawing skills.
- Textbook guidance
- Youtube "sketch a day" activities.
- Guidance via step by step resources.

Knowledge, understanding & Skills

- Confident lines/ mark making
- Smooth shading
- Cross sectional shading
- Tone
- Shade
- Faint lines for construction
- Thick and thin line techniques
- Render to suggest textures and materials.
- Can add colour to emphasis shape.
- Can add colour to make the shape stand out.
- Isometric drawing
- Oblique drawing
- 1-point perspective
- 2 point perspective
- 3 point perspective
- Contouring
- Drop shadows
- Crating technique
- Textural lines
- Technical drawing
- Mathematical drawing (working drawing)
- Using CAD packages to draw.
- To apply drawing subject knowledge to successfully display accurate design thinking and ideas in NEA.
- To apply shading and colour to help communicate design ideas.

How will we assess impact?

Drawing assessment take place regularly in Y10 through activities and students are provided regular feedback.

Design and Technology | Making and Evaluation

Knowledge, understanding & Skills

Prototype development

Students should know and understand how to evaluate prototypes and be able to:

- reflect critically, responding to feedback when evaluating their own prototypes
- suggest modifications to improve them through inception and manufacture
- assess if prototypes are fit for purpose.

GCSE Criteria 3.3.8 – Tolerances

- Work accurately using tolerances.
- How a range of materials are cut, shaped and formed to designated tolerances.
- Why tolerances are applied during making activities.

GCSE Criteria 3.3.10 – Specialist tools and equipment

- How to select and use specialist tools and equipment, including hand tools, machinery, digital design and manufacture, appropriate for the material and/or task to complete quality outcomes.
- How to use them safely to protect themselves and others from harm.

GCSE Criteria 3.3.11 – Selecting finishes and treatments

- Students should know and understand that surface treatments and finishes are applied for functional and aesthetic purposes.
- How to prepare a material for a treatment or finish.
- How to apply an appropriate surface treatment or finish.

Students will learn:-

Students will understand how to use:

Tenon Saw
Coping Saw
Sand paper – Different grades
Wet and dry sand paper
Disc Sander
Electric Sander
Pillar Drill
Electric cordless drill
Wood glue
Applying sealant
Applying wax
Vice
Scroll saw
Laser cutter
3D printer
Line bender
Vacuum former

How to assess the smoothness and finish of the wood/ plastic.
How to assess the tolerances of cut lines etc.
How to apply wax successfully.
How to create a finished and commercially viable product.
Students to feel confident in creating a fully realised idea.

Apply

To apply an objective analysis of their work in order to improve the overall quality.
Being able to analyse and evaluate work objectively.
To be able to confidently identify the tools and materials required to create their product.
Students to feel confident in being able to use all the correct materials and create a product.



How is homework used to enhance learning?

Students are guided through how to use equipment.
 Students are aware and taught the health and safety of the room and use of equipment.
 Students are made aware of safety concerns and how to remain safe at all times.
 Students are directed to www.DTStudent.com and youtube. To watch how to guides to further develop their understanding at home.

How will we assess impact? (3D)

Peer and self-assessment
 Previous lesson recap quiz
 Land mark tasks
 End of topic test

What does excellence look like?

- Students to be able to create different joints using their cutting skills.
- To be able to cut accurate straight lines, using different tools, including hand tools, electric tools and CAM machinery.
- Students can create both 2D and 3D curves using different techniques.
- Students can objectively reflect in view of improvement and make changes and adaptations in view of improvements.
- Create a fully finished product.
- Detailed objective analysis of final outcome and evaluate the different elements.



International Opportunities

Visits Programmes

Park Güell (UNESCO World Heritage site) – Girona
 Sagrada Familia (UNESCO World Heritage site) - Girona
 ZKM (Centre for Art & Media) – Heidelberg
 Technik Museum Speyer – Heidelberg
 Musée Miniature et Cinema - Lyon
 Halles de Paul Bocuse (Food Hall) – Lyon
 Place Bellecour (UNESCO World Heritage site) – Lyon
 Urban Planning Centre – Shanghai
 Oriental Pearl Tower and the Bund – Shanghai
 Silk Factory – Suzhou

Within the curriculum

- Students explore different types of softwood and hardwoods and where these originate from around the world, looking at the different climates needed to grow these species.
- The research of Fairtrade products to help producers in developing countries is explored with practical examples.
- Manufacturing systems, such as Just-In-Time which often relies on the import of goods from around the world is studied.
- The investigation of metals and other materials and their origins and mining is explored as part of the topics covering materials properties.
- Environmental sustainability of the products we design and manufacture is investigated in relation to the impact on climate change and our planet. We look at the pollution of plastics in our oceans across the world and the detrimental impact on our planet.
- Students learn about the work of others, investigating international companies, such as Apple, Braun and Alessi. They also explore various designers from around the world, including Philippe Starck, Ettore Sottsass, Aldo Rossi, Gerrit Rietveld, amongst others.
- Students explore design movements which originated in various countries, such as the Bauhaus movement and De Stijl.
- As part of the Non-exam Assessment, students are encouraged to investigate different cultures and designers to develop their own ideas, as well as exploring crafts and traditional methods from other parts of the world.

