

# Design & Technology Year 9 Curriculum Overview



## **Year 9 Overview**

The Spatial Design project introduces students to architectural design principles and modelling techniques. Beginning with a design brief to create a youth centre, students explore themes of **innovation**, **sustainability**, and **materials**, researching architectural styles and developing initial ideas through freehand sketching and annotation. They progress to advanced skills such as one-point and two-point perspective drawing, CAD modelling in Google SketchUp, and physical model making using card and foam board. The project emphasizes creativity, technical accuracy, and safe tool use, culminating in a final CAD model, a physical prototype, and an evaluation of design decisions.

The Functional Skills project focuses on building core technical drawing and presentation skills essential for design work. Students learn and apply **two-point perspective**, **orthographic projection**, **crating techniques**, and **isometric drawing**, alongside rendering methods to show light and shadow effectively. These activities develop precision and confidence in both freehand and structured drawing, preparing students for more complex design tasks. The project concludes with a series of assessed drawings and self-reflection tasks to reinforce accuracy and improvement.

In the summer term students will undertake a **Sustainable Furniture Design** project that integrates research, design, CAD modeling, and practical making skills. The focus is on creating a small piece of furniture using **sustainable or reclaimed materials**, designed for **flat-pack assembly and disassembly**. Students will learn about sustainability, ergonomics, material properties, and knock-down fittings while developing technical drawing and workshop skills. The project culminates in a finished product and a design portfolio.

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| Week Number                         | Themes/ Topics                                    | Key Knowledge & Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Key Assessments                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Autumn HT1</b>                   | Functional Skills – Technical Drawing & Rendering | <ul style="list-style-type: none"> <li>- Understanding and applying two-point perspective drawing</li> <li>- Orthographic projection (third angle)</li> <li>- Crating technique for accurate proportioning</li> <li>- Isometric drawing principles</li> <li>- Rendering techniques for shading and light direction</li> <li>- Use of rulers and grid paper for precision</li> <li>- Development of freehand sketching skills</li> </ul>                                                                                                                                                                        | <ul style="list-style-type: none"> <li>- Two-point perspective drawings of objects and buildings</li> <li>- Orthographic projection tasks with dimensions</li> <li>- Crating exercises with chosen products</li> <li>- Isometric drawings with and without grid paper</li> <li>- Rendered drawings showing light and shadow</li> <li>- Self-assessment and target setting</li> </ul> |
| <b>Autumn HT2 &amp; Spring Term</b> | Spatial Design – Architecture & Modelling         | <ul style="list-style-type: none"> <li>- Understanding architectural styles and sustainability principles</li> <li>- Applying design briefs and specifications</li> <li>- Developing creative architectural concepts</li> <li>- Perspective drawing (1-point and 2-point)</li> <li>- CAD skills using Google SketchUp</li> <li>- Physical model making techniques (measuring, cutting, assembling)</li> <li>- Safe use of tools and materials</li> <li>- Evaluating design ideas and prototypes</li> </ul>                                                                                                     | <ul style="list-style-type: none"> <li>- Initial design sketches with annotation</li> <li>- Peer and self-assessment of design ideas</li> <li>- Final CAD model in Google SketchUp</li> <li>- Physical scale model of youth Centre</li> <li>- Written evaluation and improvements</li> </ul>                                                                                         |
| <b>Summer Term</b>                  | Sustainable Furniture Design                      | <ul style="list-style-type: none"> <li>- Understand sustainability in design and environmental impact.</li> <li>- Explore flat-pack concepts and knock-down fittings.</li> <li>- Generate design ideas and produce annotated sketches.</li> <li>- Develop CAD models with exploded views and cutting lists.</li> <li>- Safe use of tools and workshop equipment.</li> <li>- Accurate cutting and assembly using knock-down fittings.</li> <li>- Apply eco-friendly finishes.</li> <li>- Test products for stability and ease of disassembly.</li> <li>- Complete evaluation and presentation board.</li> </ul> | <ul style="list-style-type: none"> <li>- Baseline design skills check.</li> <li>- Assessment of design ideas and CAD work.</li> <li>- Peer feedback on design concepts.</li> <li>- Assessment of final product quality and functionality.</li> </ul>                                                                                                                                 |

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|  |  |  | <ul style="list-style-type: none"><li>- Evaluation against design brief.</li><li>- Presentation of a design portfolio.</li></ul> |
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