Key Stage 3 Project Overview

Year 7 – Design & Technology Curriculum

Pupils in Year 7 and 8 cover a wide range of different Design & Technology which covers a multitude of different disciplines. Students will experience all areas of Design & Technology including CAD CAM, resistant materials, product design, graphics, electronics and food. Throughout the year students will complete 5 different projects. During year 7 & 8 students will have one design & Technology lesson per week so each project will take between 5-8 lessons to complete. During this time students will need to complete a minimum of two pieces of work that will be formally marked and assessed by their class teacher. Due to the need for specialist equipment & workshops year 7 & 8 projects do not take place in any particular order but all projects will be covered throughout the year.

Year 7 Project Overview

Topic	Skills / topic areas covered	Assessed tasks
3D CAD	• How 3D printers work • Where are 3D printers used in the design industry • ACCESS FM • How to use Tinkercad	Research tasks & Final 3D cad outcome (final model marked on accuracy and overall complexity / challenge)
2D CAD	• What is CAD CAM • How Laser cutters works • Using 2D Design V3	Research tasks & Final laser cut product (marked for accuracy and knowledge and understanding of the CAD tools used)
Food & Nutrition	• Safety in the kitchen • Food Safety & Hygiene • Design brief, project discussion • Practical Activities	All Practical activities
Product Design & Materials Theory	• Safe workshop practices • Hand tools • Workshop machinery • Workshop Health & Safety • Materials and their properties • Woods • Metals • Plastics • Manufactured Boards • Practical Activities	Homework tasks relating to each material area. End of unit Test.

Year 8 Project Overview

Topic	Skills / topic areas covered	Assessed tasks
3D CAD CAM	• Tinkercad • How 3D printers work & Set up • Design evolution • Research skills • Cross curricular / STEM topics – Drag / air resistance, downforce, thrust, aerodynamics, friction.	Research tasks & Final 3D cad outcome (final model marked on accuracy and overall complexity / challenge)
2D CAD CAM	• 2D Design- All tools and features of the software • How laser cutters work & set up • Vectorising of images • Scales of production	Research tasks & Final laser cut product (marked for accuracy and knowledge and understanding of the CAD tools used)
Product Design	• Workshop Health & safety • Hand tools & their uses • Scroll saws • Sanders • Tenon, coping and Hacksaws • Materials & their properties (wood) • Pillar drills and drill bit varieties	Quality of final product
Food & Nutrition	• Safety in the kitchen • 4 C's • Food Safety & Hygiene • Design brief, project discussion • Practical Activities • Energy & dietary needs • Labelling • GM Foods	

Year 9 Project Overview

Topic	Skills / topic areas covered	Assessed tasks
CAD CAM 2D & 3D	• 2D Design (CAD) • Introduction to Onshape (3d cad) • How to set up and use the laser cutter • What is injection moulding and where is it used in the product design industry • Working to given tolerances • How to set up and use the 3D printers Onshape: • Sketches • Extrusion • Fillets & Chamfers • Shelling • Revolve • Sweeps • Lofts	Accuracy of final mould when working to the given tolerances. Knowledge and understanding of injection moulding End of unit test
Product Design & Electronics	• Health & Safety in the workshop • Hand tools • Filing techniques • Finishing techniques • Workshop machines • How to use the strip heater • How to use the buffer • How to solder • Introduction to basic electronic circuits	Final product (marked for overall quality & accuracy)
Graphical skills	• Isometric drawing • Oblique drawing • One point perspective drawing • Two point perspective drawing	All students will be formally marked on their final assessment drawing for each of the four drawing techniques covered.
Manufacturing Theory	• Scales of production • Economies of scale • Injection moulding • Blow moulding • Extrusion • Vacuum forming • Casting • Quality control & quality assurance • Tolerances	Homework tasks relating to each material area. End of unit Test
Product Design & Electronics	• Introduction to electronics • Input, control & outputs in electronic circuits	Quality of final product (specific focus on

	• Soldering • Vacuum forming • Jigs, moulds, forms & templates	quality of soldering and making of electronic circuit) Testing and evaluation of final product.