

Curriculum Intent:

Design and Technology is an inspiring, rigorous and practical subject. Through design technology, we encourage students to learn to think and intervene creatively to solve problems both as individuals and as members of a team. At Burnage Academy for Boys we provide students with the opportunities to design and make products with a purpose in mind. We encourage creativity supporting students to go beyond the classroom creating responsible consumers, and successful innovative designers and engineers of tomorrow. We aim to develop happy, creative and successful learners that can change the ever-developing Design and Technology landscapes, such as product design, engineering, furniture design and sustainable futures, preparing them for A-Level, level 3 BTECs or apprenticeships.

Year 7	HT1	HT2	HT3	HT4	HT5	HT6
Content, Knowledge & Skills	Greetings Card Students will investigate design themes across different cultures. Students will develop skills in 'cartoon sketching' to help create an identity to their greetings card.	Greetings Card Students will investigate pop up mechanisms and learn how to recreate them. Students will be introduced to the DT discipline of 'Graphics' and working with paper and card to produce a final 'Greetings Card'.	Burnage Grand Prix Students will build on prior drawing skills to produce design ideas. Students will develop skills in workshop tool use to create and assemble a 'race ready' toy car.	Burnage Grand Prix Students will develop an understanding of workshop Health and Safety. Students will be introduced to a range of basic workshop tools.	Desk Tidy Students will learn about Polymers – Thermoforming and Thermosetting plastics used in school and develop an understanding of the working properties.	Desk Tidy Students will be introduced to workshop equipment – Laser cutter, Strip heat bender and create their own acrylic desk tidy.
Purpose / potential links to KS4 & future steps	To investigating customers and themes. Introduction to sketching and rendering techniques. KS4 Links & Future Steps: Market Research. Product Analysis. Exploring and Developing a Design Idea.	Introduction to modelling, prototypes and rendering skills. KS4 Links & Future Steps: Properties of Paper and Board. Working with Paper and Board.	Introduction to isometric drawing. KS4 Links & Future Steps: Drawing Techniques. Manufacturing Specification.	Introduction to basic workshop skills and routines including woodworking hand tools KS4 Links & Future Steps: Shaping Materials — Hand Tools. Shaping Materials — Power and Machine Tools. Working Safely.	Researching designers and analysing products. Developing modelling techniques. KS4 Links & Future Steps: Looking at the Work of Designers. Metals, Alloys and Polymers.	Shaping plastics by using the line bender, using a former and finishing plastic. KS4 Links & Future Steps: Using Materials Efficiently
Key Vocabulary	Paper, pencil, colours, scissors	Card, glue, pencil, colours, scissors	Isometric paper, coloured pencils	Pine, hand tools, tenon saw, coping saw, bench, hook, file	Card, templates, scissors.	Laser cutter, strip heater, wet and dry paper, former

<p>Assessment</p> <p>Teacher and pupil assessment.</p>	<p>AO1: Identify, investigate and outline design possibilities to address needs and wants.</p>	<p>AO2: Design and make prototypes that are fit for purpose.</p> <p>AO3: Analyse and evaluate design decisions and outcomes, including for prototypes made by themselves and others</p>	<p>AO2: Design and make prototypes that are fit for purpose.</p>	<p>AO2: Realising design ideas</p> <p>AO3: Analysing & evaluating</p>	<p>AO1: Identify, investigate and outline design possibilities</p>	<p>AO2: Design and make prototypes that are fit for purpose.</p> <p>AO4: Demonstrate and apply knowledge and understanding of designing and making principles</p>
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Year 8	HT1	HT2	HT3	HT4	HT5	HT6
Content, Knowledge & Skills	Monster Battle Bot Students will build on prior skills in 'cartoon sketching' to create a monster character. Students will be introduced to Electronic system blocks – Input, Process, and Output.	Monster Battle Bot Students will continue to build on prior knowledge of electronic systems to complete a working circuit using basic components. Students will develop the working circuits to create a moving 'Monster Battle Bot'.	Table Cricket Bat Students will be introduced to 'inclusive design' using the framework of table cricket. Students will be introduced to the working properties of softwood – pine.	Table Cricket Bat Students will create a logo to be applied to their cricket bat. Students will build on prior knowledge of CAD – 2D design and be introduced to vinyl plotters – CAM.	Perspective Drawing Students will build on prior drawing skills to produce a room in one point perspective.	Perspective Drawing Students will develop skills in CAD – 2D design to use contour/render and dimension tools to create a realistic room design for a teenage user.
Purpose / potential links to KS4 & future steps	Introduction to design development using magnified detail/innovation. KS4 Links & Future Steps: Exploring and Developing a Design Idea. More on Drawing Techniques.	Develop an understanding of line bending and wiring electrical components. KS4 Links & Future Steps: Properties of Components in Systems. Technology in Manufacturing.	Exploring the use of workshop hand tools. Introduction to marking out a joint. Finishing techniques. KS4 Links & Future Steps: Understanding User Needs. Production Aids Production Systems — CAD/CAM.	Develop skills in CAD by creating a logo design using vinyl plotting. KS4 Links & Future Steps: Power and Machine Tools. Treatments and Finishes.	Building on previous drawing techniques. Types/thickness of line. One point perspective drawing. KS4 Links & Future Steps: Drawing Techniques More on Drawing Techniques.	CAD skills including grid lock, "boundary fill" and "delete part". Develop rendering techniques using CAD. KS4 Links & Future Steps: Production Systems — CAD/CAM.
Key Vocabulary	Card, polymers, line bending	Electronics kit, line bender, HIPS, card	Bandfacer, coping saw, file, tenon saw, try square, steel rule, template, sandpaper, varnish.	Vinyl plotter, vinyl, squeegee	Pencil, ruler, pencil colours	2D Design

Assessment Teacher and pupil assessment.	AO1: Identify, investigate and outline design possibilities to address needs and wants. AO2: Design and make prototypes that are fit for purpose.	AO2 Generating design ideas. AO2 Developing design ideas	AO1: Identify, investigate and outline design possibilities to address needs and wants. AO2: Design and make prototypes that are fit for purpose.	AO3: Analyse and evaluate wider issues in design and technology.	AO4: Demonstrate and apply knowledge and understanding of designing principles.	AO4: Demonstrate and apply knowledge and understanding of technical principles.
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Year 9	HT1	HT2	HT3	HT4	HT5	HT6
Content, Knowledge & Skills	<p>Pewter Jewellery Students will build on prior knowledge of 'user centred design' to identify a customer and produce a profile and questionnaire. Students will also investigate a range of net designs and create packaging.</p>	<p>Pewter Jewellery Students will be introduced to Pewter casting and how to use the casting unit safely and correctly. Students will use a CAM - laser cut mould to complete a cast metal (pewter) keyring.</p>	<p>Jewellery Box Students will build on prior knowledge of workshop tool use. Students will be introduced to jointing and the half lap joint.</p>	<p>Jewellery Box Students will build on prior knowledge to use workshop tools safely and correctly to complete a jointed jewellery box including finger joints, hardboard base, plywood lid and MDF inserts.</p>	<p>Modern Architecture Students will investigate 20th Century architecture and develop an understanding of the built environment. Students will be introduced to modern styles of architecture – Deconstructivism, Hi-Tech, Brutalism and Sustainable.</p>	<p>Modern Architecture Students will be introduced to CAD and develop 3D modelling skills to make a building. Students will continue to develop skills in CAD – Google Sketchup to render the model and add lighting effects.</p>
Purpose / potential links to KS4 & future steps	<p>Introduction to creating a mould using CAD. Developing design skills by creating packaging design with nets and modelling.</p> <p>KS4 Links & Future Steps: Understanding User Needs. Market Research. Exploring and Developing a Design Idea. Printing Techniques.</p>	<p>Introduction to metalworking including grades of finish.</p> <p>KS4 Links & Future Steps: Moulding and Joining. Metals, Alloys and Polymers.</p>	<p>Developing marking out, sawing and squaring skills.</p> <p>KS4 Links & Future Steps: Manufacturing Specification. Quality Control Production of Materials.</p>	<p>Developing an understanding of fitting joints and grades of finishing. Using peer review to evaluate against a specification.</p> <p>KS4 Links & Future Steps: Properties of Materials Shaping Materials — Hand Tools.</p>	<p>Analysing architectural styles, describing key characteristics, conducting and presenting research.</p> <p>KS4 Links & Future Steps: Looking at the Work of Designers. Drawing Techniques.</p>	<p>Converting area and scale, 3D modelling</p> <p>KS4 Links & Future Steps: More on Drawing Techniques. Properties of Paper and Board. Working with Paper and Board.</p>

Key Vocabulary	MDF, card, box nets	Pewter, MDF, needle files, hacksaw, metalwork vice, emery cloth	Pine, tenon saw, bench hook, vice, flat file, band facer, try square, marking gauge.	Workshop hand tools, hardboard, plywood, MDF.	Research materials and websites, architectural tour of Manchester.	2D Design, Google Sketchup
Assessment Teacher and pupil assessment.	AO1: Identify, investigate and outline design possibilities to address needs and wants. AO2: Design and make prototypes that are fit for purpose.	AO4: Demonstrate and apply knowledge and understanding of designing principles.	AO3: Analyse and evaluate wider issues in design and technology.	AO2: Design and make prototypes that are fit for purpose. AO4: Demonstrate and apply knowledge and understanding of designing and making principles.	AO1: Identify, investigate and outline design possibilities to address needs and wants.	AO4: Demonstrate and apply knowledge and understanding of designing principles. AO4: Demonstrate and apply knowledge and understanding of technical principles.