CURRICULUM ROADMAP - Nursery to Year 13

Design Technology

BIRKENHEAD HIGH SCHOOL ACADEMY

GDST GIRLS' DAY SCHOOL TRUST

Year 13 (SUM)

Revision
HT5 3.2.8 Responsible Design
3.2.10
HT6

Year 13 (SPR)

Courses & Industry
Health & Safety
HT3 Coursework eval
HT4 Product lifecycle

Year 13 (AUT)

Design Skills
COURSEWORK
Final development models
HT1 3.1.11 Design development
HT2 3.1.13

Year 12 (SUM)

Product development & modelling
Feedback skills/workshop skills
HT5 Inclusive Design
HT6

Year 12 (SPR)

CAD/CAM
Modern materials
Skills
Knowledge & Understanding
COURSEWORK
HT3 Computer Systems
HT4

Year 12 (AUT)

Knowledge & Understanding
Workshop Skills
Materials
HT1 Wood/Light
HT2 Papers/Boards

Year 11 (SUM)

Y11 Spr cont…
Evaluate
REVISION
COURSEWORK

Year 11 (SPR)

Prototype development - final ideas; manufacture; evaluation
COURSEWORK

Year 11 (AUT)

Design Brief - initial ideas; feedback; design development
Product analysis
COURSEWORK

Year 10 (SUM)

Concept & Brief - client and product analysis
COURSEWORK

Year 10 (SPR)

Design Strategies: incl. CAD, needs of users/clients
Mechanical Devices/New Materials
Plastics (as Y10 Aut K+U of woods)
Maths: data/graphs; area/volume; money; %s; conversions; trigonometry

Year 10 (AUT)

Wood - Knowledge & Understanding: extractions of raw materials; conversion; stock forms; properties; manufacture processes; finishes
Workshop Skills: hand/power tools and equipment
Energy Systems (links to science, geography & computing)
Design Strategies & Skills: isometric/ORT etc; designers; influences

Year 9 (SUM)

Designer/drawing techniques
Designer/company research
Orthographic, isometric, one/two point perspective, exploded drawings
Presentation skills

Year 9 (SPR)

Sustainable Design
Work of others
6R's
Polymers
Sustainability
Planned obsolescence

Year 9 (AUT)

Designer research - designing 'in the style of'
Client-centred project
Working towards a brief; designing/client/peer feedback
Development; scale/sizing
Workshop health & safety; practical skills: tools, equipment, finishes
Evaluating/improvements

Year 8 (SUM)

Automaton Toy Project:
Mechanical devices
Flat pack furniture
Drawing techniques
Specification

Year 8 (SPR)

Designing for others:
- design brief/specification
- ergonomics
- anthropometrics
- scale
- prototypes
- templates

Year 8 (AUT)

Design Movement / Modelling Project
Prototypes: why, consumer, manufacturer
Design movements - prep; practical skills: hand tools intro
Materials knowledge - Styrofoam; use of modelling materials
Finishes
Scale of prototype (measuring in cm/mm)
3D drawings

Year 7 (SUM)

Y7 Spring project continued
Drawing techniques:
- technical
- isometric
- orthographic

Year 7 (SPR)

Graphics / Design Project
Ambient media: understanding of advertising, colour, theme, style, client
Introduction to modelling/prototypes: why do we make prototypes?
Scale/measuring in cm/mm
Introduction to small tool equipment
Client research/feedback
Freehand 3D drawing; intro to basic drawing techniques

Year 7 (AUT)

Designer research - designing 'in the style of'
Caterpillar Project
- Health and Safety
- Measuring/marking out
- Designing for companies
- Sustainability
- Material research
- Tools & equipment; mechanical devices

Year 6 (SUM)

Design an ocean ROV sampler
Explore remotely operated vehicles and why scientists develop them. Explore STEM grabber prototype & demonstrate the working mechanism. Use template to make own prototype & suggest improvements.

Investigate the working mechanism of ROVs
Examine a range of ROVs used in a real context
Build a working prototype
List materials, tools & components

Year 6 (SPR)

No DT taught in Spring term

Year 6 (AUT)

DT drop-down day:
Create an energy bar wrapper for an explorer

Research & evaluate current energy bar wrappers (colour, information etc)
Use research to generate own design & inform decisions
Create wrapper
Refine, review, rework & improve product
Identify strengths & weaknesses of their design
Discuss how well finished product meets intended design criteria

Year 5 (SUM)

Investigate types of bridges & their supporting structures, culminating in an exciting bridge building challenge

Research & evaluate existing structures; consider use & purpose
Make more complex designs to include belts & pulleys & other mechanisms
Build frameworks to support mechanisms
Consider & explain how the finished product could be improved relating to design criteria

Year 5 (SPR)

Fashion/Textiles: Make a fabric case for an item
Explore fabric options, including manufacture, sustainability and a range of uses

Use annotated sketches & diagrams to record ideas
Use drawings to formulate design ideas
Sketch & model alternative ideas, deciding which to develop
Develop one idea in depth
Select from & use a wide range of materials
Cut accurately & safely to a marked line

Year 5 (AUT)

No DT taught in Autumn term

Year 4 (SUM)

Design/Mechanics: Design & make a moving storybook
Consumer research, create a book for a child in EYFS. Create a prototype, suggesting improvements. Follow a design brief, use recyclable materials (reduce, reuse, recycle).

Use annotated sketches to record ideas/plans
Select from different techniques for different parts of the process
Develop their design through their own reflection & evaluation of others
Carry out tests before making improvements
Understand different technical elements of what makes parts move in a 2D book

Year 4 (SPR)

No DT taught in Spring term

Year 4 (AUT)

Design & make torches for a specific purpose

Use annotated sketches to record ideas/plans
Select from different techniques for different parts of the process
Identify strengths/weaknesses of their ideas in relation to purpose/user
Discuss how well their product meets the user's design criteria, exploring how it could be improved relating to design criteria
Use electrical systems: incorporate a circuit into a model (switch, bulbs, etc)
Produce step by step plans with technical vocabulary

Year 3 (SUM)

Make bread
(inspired by Roman & Greek history topic)

Begin to understand food groups on the Eatwell Plate
Follow instructions/recipes
Join & combine a range of ingredients
Understand safe food storage
Recognise what has gone well; suggest further improvements for the finished article; suggest which elements they would do better in the future; identify where evaluation has led to improvements

Year 3 (SPR)

Make photograph frames

Develop more than one design/adaptation of an initial design
Use annotated sketches to record ideas/plans
Select from a range of tools (cutting, shaping, joining, finishing)
Use what they know about the properties of materials; plan to include joins
Research the needs of the user, decide which idea to develop
Recognise that their design must meet a need and be useful
Consider & explain how the finished product could be improved
Investigate similar products to give starting points for design

Year 3 (AUT)

Using Pullies

Plan actions to make a product, ordering work, deciding on tools/materials
Propose realistic suggestions about how to achieve their design
Apply what they know about mechanisms to create movement when planning & designing
Use tools with accuracy; explain function of tools selected
Investigate a range of products to see how they work
Use an increasingly appropriate technical vocabulary for tools/materials & their properties

Year 2 (SUM)

Nutrition: Design a balanced meal
Skills focus: Customer. Cost. Safety.
Slicing carefully using a bridge/claw grasp
Constructing wrapper
Taste test & evaluate

Design a healthy wrap based on food combinations which are compatible (knowledge of eating plate)
Make a healthy wrap
Discuss how closely their finished product meets their design criteria
Choose appropriate materials & tools

Year 2 (SPR)

No DT taught in Spring term

Year 2 (AUT)

Structures: Making a chair for Baby Bear
Skills focus: Environment, Function, Material, Size
Make a structure according to a design criterion.
Use joints and structures.
Test out own ideas.
Evaluate the strength & suitability.

Propose more than one idea for a product
Explain why they are using chosen materials; explore the most effective shapes for a strong chair
Discuss how closely their finished product meets their design criteria
Decide how existing products do/don't achieve their purpose
Measure accurately & assemble

Year 1 (SUM)

Create a bookmark

Design for a purpose
Follow a design
Cut appropriate lengths of thread
Join thread to fabric by stitching
Use a needle and thread to create a design
Evaluate their finished design

Year 1 (SPR)

Make a fruit kebab (link to science)

Say what they like/don't like; attempt to say why
Say could be done differently next time to improve
Select tools & equipment needed to shape, join & finish
Know about basic safety & hygiene
Know the benefits of fruits and vegetables

Year 1 (AUT)

Investigating mechanisms: sliders, levers, pivots, wheels (moving pictures).

Use pictures/words to convey what to design/make; generate own ideas from their experiences
Explain what they are making. Name the tools used
Join 2 materials together; make models; know features of some familiar products. Explore different ways of making 2D things move

Reception (SUM)

Create a product with a purpose in mind
Explain & modify designs
Discuss ideas with a friend
Evaluate their design/product and suggest improvements

Constructs with a purpose in mind using various materials
Uses simple tools & techniques needed to shape & assemble & join materials used (glue, masking tape, etc)

Reception (SPR)

Introduction to joining tools…
…such as Sellotape, paper clips, split pins, masking tape, staplers, hole punches, string, ties and cable ties.
Use threads, ties and loops to weave and join.

Use various items to explore construction
Understand that different materials can be combined to create new effects
Use simple tools & techniques needed to shape & assemble & join materials used (glue, masking tape, etc)

Reception (AUT)

Introduction to the creative area
Positive handling of equipment such as scissors, rolling pins, plastic scalpels, hammers
Safety in the creative area: tidying away, preparing work spaces
Exploration of materials & moving to more demanding materials such as fabric, card, foil, plastic and wood

Develop cutting skills, folding, tearing paper & card
Work with a variety of materials & explore them
Roll paper to create tubes
Constructs with a purpose in mind using various materials
Uses simple tools & techniques needed to shape & assemble & join materials used (glue, masking tape, etc)

Nursery (SUM)

Evaluating & Improving
Children will be encouraged to think how they can improve their designs and products, discussing this with peers and adults.

Develop cutting skills, folding, tearing paper & card
Use various items to explore construction
Evaluate their ideas/designs/creations
Constructs with a purpose in mind

Nursery (SPR)

Taking risks and creating with a purpose
Children will experience first-hand the consequences of the decisions they have made.
Purposeful making involves creativity, imagination and fun - as well as making mistakes.

Work with a variety of materials & explore them to create various shapes and things
Use items to build with and explore construction (inside & outside)
Constructs with a purpose in mind using various materials

Nursery (AUT)

Open-ended play & making sense of our world
Playing, investigating and exploring building and making through a variety of areas such as playdoh, construction and outdoor provision.

Work with a variety of materials & explore them (incl. paint, playdoh, shaving foam), roll paper to create tubes, cut out shapes etc
Explore construction (incl. duplo, wooden blocks, stickle bricks, crates, pallets, blocks outside, etc.)

KEY:

- Knowledge

Skills:

- Design & Develop
- Make
- Product & Evaluate
- Technical Skills
- Cooking & Nutrition