# DT Resistant Materials Learning Journey

AQA

GCSE
2 Hour DT Exam

Exam Board: AQA

## Year 11

End of the NEA Project (MAY)

**Section E – Realising the Prototype**
- Manufacturing plan (process, tools, materials, QC)
- Manufacturing diary with photos
- Final prototype (accurate, functional, safe)

**Section C – Initial Ideas**
- At least 5 ideas
- Ergonomics & anthropometrics considerations
- Social + environmental impact
- Idea evaluation

**Section F – Evaluation**
- Specification evaluation
- Prototype testing with evidence
- Client testing & interview
- Modifications
- Final evaluation

**Section D – Development**
- Physical models & CAD models
- Client feedback
- Detailed technical development
- Final design + orthographic drawings

**Section B – Design Brief & Specification**
- Problem statement
- Target user
- Specification with full justification: cost, ergonomics, materials, safety, environment, manufacture

**Section A – Research & Investigation**
- Investigating contextual challenges
- Moodboard, product analysis
- Client profile + interview
- Research summary

## Year 10

Technical Development Projects

Start of the NEA Project (JUNE)

**Key Knowledge & Skills**
- Properties of acrylic and other common materials
- Environmental impact (production, use, disposal, recyclability, alternatives)

**CAD/CAM Skills**
- Extensive 2D Design and Sketchup operation
- Tracing images with path tool
- Exploding text
- Setting engraving/cutting line colours
- Creating accurate 3D digital models

**Research**
- Moodboard of existing products
- Environmental evaluation of chosen objects and materials
- Research how certain machines work
- Moodboard of personal interests to form final design

**Practical Skills**
- Accurate finger joint construction
- Use of coping saw, vice, try square, bench hook
  Belt sanding
- Fitting hinges with screws
- Adding MDF base & acrylic lid with epoxy resin

## Year 9

Designer Inspired Pine Storage Box

**Key Knowledge & Skills**
- Understanding design movements: Memphis, Zaha Hadid, Foster, Breuer/ Bauhaus, Alessi
- Product analysis (good/bad points, design features, user, safety, materials, cost)
- Understanding pine & MDF dimensions and suitability for construction

**Design Skills**
- Designer-inspired moodboard
- Full design specification (target user, cost, value, function, materials, appearance, safety)
- Four design ideas, annotated & evaluated
- 3D isometric final design with materials & measurements

**Practical Skills**
- Marking out MDF
- Finger-joint construction (precise measuring, cutting)
- Drilling CAM shaft holes
- Assembling frame & follower
- Sanding & finishing wood surface

## Year 8

Mechanical CAM Toy Project

**Key Knowledge & Skills**
- Understanding mechanisms: rotation to reciprocation & different CAMs
- Labelling inputs, outputs, movement types
- Product analysis of existing toys (function, CAM type, sustainability, materials)

**CAD/CAM Skills**
- 2D Design basic commands
- Understanding red = engraved black = cut
- Preparing MDF mould & acrylic inserts for laser cutting

**Design Skills**
- Design specification (appearance, user, cost, sustainability, function, safety)
- Generating design ideas
- Using perspective drawing (2-point) and isometric projection for 3D development

## Year 7

Disney Pewter Medallion Project

Endangered Wildlife Keyring Project

**Key Knowledge & Skills**
- Material properties and understanding pewter (non-ferrous alloy, low melting point)
- Learning what medallions are & their commercial use

**Key Knowledge & Skills**
- Workshop safety, hazards, PPE, safe tool use
- Materials & their sources (woods, plastics, metals, manufactured boards)
- Understanding resistant materials & their properties
- Product analysis (appearance, function, cost, materials, size, customer) using structured questions

**Design Skills**
- Product analysis of medallions (appearance, function, customer, cost, size)
- Design specification (user, function, safety, cost, appearance)
- Design development & annotated sketches for acrylic insert + pewter shape

**Practical Skills**
- Coping saw, files, vice, drilling, sanding & polishing

**Design Skills**
- Sketching & annotating ideas
- Selecting best idea and justifying choice
- Creating a plan of making (tools, sequence, timing)