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| **Curriculum Intent:** Design Technology is an inspiring, rigorous, and practical subject that prepares students for the world in the 21st century and industry. At the Dorcan Academy we aim to encourage students to develop innovative solutions to solve problems using the iterative design process. Through rich and powerful subject knowledge, students are taught to deploy a range of materials, techniques, and processes to strategically evolve prototypes that suit the requirements of the intended user.We aim for all our students to become rounded learners, i.e., promoting personal responsibility, resilience and independence within the workshops and encouraging experimentation in their portfolios to develop depth of subject knowledge and practical skills which will provide students with pathway opportunities into further education and industry. |
| **Subject Specific Skills:****Identify, Investigate & outline design possibilities** * To identify design possibilities, investigate client needs and wants and factors including economic and social challenges.
* Research using primary and secondary sources to draw accurate conclusions and develop informed designs.
* To produce a design brief and specification.

**Design & Make Prototypes** * To demonstrate flair and originality by exploring a range of possible innovative ideas linking to the contextual challenge set.
* Develop and refine ideas using various drawing styles, modelling and CAD.
* Create prototypes using a range of materials, techniques and processes including CAM/CNC.

**Analyse & Evaluate*** To analyse and evaluate their work throughout to improve outcomes.
* Undertake a range of tests to formulate the final evaluation.
 | **Wider Key Skills:*** Examination Techniques
* Evaluate Key Concepts
* Independent Learning
* Problem solving
* Resilience
* Proof-reading
* Critical thinking
* Independent enquiry
* Reflective learning
* Creative thinking
* Self-management
* Time management
* Arithmetic and numerical computation
* Handling data
* Graphs
* Geometry & Trigonometry
* Science links
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| **Year Group: 7** | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Topic** | **Personalised Storage Box** | **Personalised Storage Box** | **Personalised Storage Box** | **Personalised Storage Box** | **Healthy Eating** | **Healthy Eating** |
| **Key Content/ Knowledge** | * Design Process
* Research
* Designers
* Design Specification
* Design development
 | * CAD
* Working with hand tools
 | * Electronics
* Working with hand tools
 | * Assembling
* Testing
* Evaluating
 | * Food Safety
* Principles of Nutrition
* Food Commodities: Fruit and Vegetables

FishFats and OilsBread | * The Science of food
* Cooking and Food preparation.
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| **Skills Covered** | Client profiling Task analysis Primary & Secondary research Designing Presentation skills 3d Drawing Design influence  | 2d design Laser cutting Using MDF & PlywoodMeasuring & Cutting Hand saws Working within tolerances Sanding Finishing  | Electric circuits Soldering Measuring & Cutting Hand saws Working within tolerances Sanding Finishing  | Glue gun PVAUse of clamps Assembling using quality checks and controls Finishing techniques Reflection Analysing Extended writing  | WeighingMeasuringKnife SkillsPrepare, combine & ShapeSelect and use of equipment. | Select and adjust cooking process.Preparation of ingredients and equipment.Test for readiness.Judge and manipulate sensory properties. |
| **Assessment** | Cumulative Assessment | Cumulative Assessment  | Cumulative Assessment | Summative Written Assessment | Baseline AssessmentFormative Assessment | Summative Assessment |
| **Tier 2 and 3 Words** |  |

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| **Year Group: 8** | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 4** | **Term 6** |
| **Topic** | **Personalised** **Desk Lamp** | **Personalised** **Desk Lamp** | **Personalised** **Desk Lamp** | **Personalised speaker** | **Diet & good health** | **Diet & good health** |
| **Key Content/ Knowledge** | * Design Process
* Research
* Designers
* Design Specification
* Design development
 | * Electronics
* Working with hand tools
* Electric machines
* Components
 | * Electronics
* Working with hand tools
* Electric machines
* Components
 | * Personalising
* Assembling
* Testing
* Evaluating
 | * HACCP
* Nutrition – Macro and Micronutrients
* The Eat well Guide
* Food Commodities:

MeatDairy ProductsPasta | * Food Science
* Food Provenance
* Cooking and food preparation.
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| **Skills Covered** | Client profilingTask analysisPrimary & Secondary researchDesigningPresentation skills3D DrawingDesign influence | Electric circuitsSoldering Measuring & CuttingHand sawsWorking within tolerancesSandingVarnishing | Electric circuitsSoldering Measuring & CuttingHand sawsWorking within tolerancesSandingVarnishing | Using adhesives Use of clampsAssembling using quality checks and controlsFinishing techniquesReflectionAnalysingExtended writing | Accurate weighing andMeasuring.Knife SkillsTenderise and MarinatePreparation of ingredients and equipment. | Select and adjust cooking temperatures and process.Test for readiness.Judge and manipulate sensory properties. |
| **Assessment** | Cumulative Assessment | Cumulative Assessment | Cumulative Assessment | Summative Written Assessment | Baseline AssessmentFormative Assessment | Summative Assessment |
| **Tier 2 and 3 Words** |  |

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| **Year Group: 9** | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Topic** |  **Drawing Techniques** | **Pop-Up Bok** | **Pop-Up Book** | **Pop-Up Book** | **Maze** | **Maze** |
| **Key Content/ Knowledge** | * 2d drawing
* 3d drawing
* Perspective Drawing
* Tools & equipment
* Health & safety
 | * Movement & motion
* Levers
* Linkages
* Forces & stresses
 | * CAD Design Software Intro
* Designing
* Modelling
* Manufacturing
 | * Designing
* Modelling
* Manufacturing
 | * Design
* Development
* Working with constraints
 | * Workshop skills
* Making
* Evaluating
* Modifying
 |
| **Skills Covered** | FreehandIsometricOrthographicCrating1 point perspective2-point perspectiveRendering | EnquiryReflectingJustifyingInitial ideas/modellingMeasuring/accuracyExperimenting with techniques and processesEvaluating | CADCAMHandling papers and boardsPop up materials, tools, techniques, and processesQuality AssuranceConstructionAssembly | CADCAMHandling papers and boardsPop up materials, tools, techniques, and processesQuality AssuranceConstructionAssembly | Initial ideas – designing mazeEvaluating & modifyingCAD/CAMMeasuringMarkingCuttingAssembling | CADCAMHandling timbers, working with tools, techniques and processes that require the use of saws, drills, vices, various components, and adhesives.Quality AssuranceConstructionAssembly |
| **Assessment** | Formative Written Assessment | Cumulative Assessment | Cumulative Assessment | Cumulative Assessment | Cumulative Assessment | Summative Written Assessment |
| **Tier 2 and 3 Words** |  |

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| **Year Group: 10** | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Topic** | **Core Technical Principles** | **Core Technical Principles** | **Specialist Technical Principles** | **Mock NEA** | **Mock NEA** | **NEA** |
| **Key Content/ Knowledge** | * New & emerging technologies
* Energy generation & storage
* Development in new materials
* Systems approach to designing
 | * Mechanical devices
* Materials
* Working properties of materials
* Scale of production
 | * Selection of materials and components
* Forces & stresses
* Ecological & social footprint
* Sources & origins
* Stock forms & types
* Specialist techniques & processes
* Surface treatments & finishes
 | (Making Lamps, incorporating all material areas)* Produce design brief
* Generate a design specification
* Generate ideas
* Ongoing research
* Experiment using a range of techniques
 | (Making Lamps, incorporating all material areas)* Developing designs
* Realise design ideas
* CAM/CNC
* Materials and their properties
* Tolerances
* Construction
* Assembly

. | * Produce design brief
* Generate a design specification
* Generate ideas
* Ongoing research
* Experiment using a range of techniques
 |
| **Skills Covered** | Exam revision & preparationMultiple choice questionsExtended writing | Exam revision & preparationMultiple choice questionsExtended writing | Exam revision & preparationMultiple choice questionsExtended writing | EnquiryReflectingJustifyingInitial ideas/sketchingExperimenting with techniques and processes | 2d drawing3d drawingPresentationRenderingCAD skillsPrototypingMaking and finishingQuality checks & Controls | EnquiryReflectingJustifyingInitial ideas/sketchingExperimenting with techniques and processes |
| **Assessment** | **Cumulative Assessment** | **Cumulative Assessment** | **Cumulative Assessment** | **Cumulative Assessment** | **SummativeWritten Assessment** | **Formative****Written Assessment** |
| **Tier 2 and 3 Words** |  |

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| **Year Group:**  | **Term 1** | **Term 2** | **Term 3** | **Term 4** | **Term 5** | **Term 6** |
| **Topic** | **NEA** | **NRS** | **Core Technical Principles – Revision** | **Core Technical Principles - Revision** | **Specialist Technical Principles - Revision** |  |
| **Key Content/ Knowledge** | * Developing designs
* Realise design ideas
* CAM/CNC
* Materials and their properties
* Tolerances
* Construction
* Assembly
 | * Testing
* Refining
* Modifying
* Evaluating
 | * New & emerging technologies
* Energy generation & storage
* Development in new materials
* Systems approach to designing
 | * Mechanical devices
* Materials
* Working properties of materials
* Scale of production
 | * Selection of materials and components
* Forces & stresses
* Ecological & social footprint
* Sources & origins
* Stock forms & types
* Specialist techniques & processes
* Surface treatments & finishes
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| **Skills Covered** | 2d drawing3d drawingPresentationRenderingCAD skillsPrototypingMaking and finishingQuality checks & Controls | Developing Critical thinkingReflectionAnalysingExtended writingComparisonJustifying & LinkingDesignProcedural textDiscussion Recount | Exam revision & preparationMultiple choice questionsExtended writing | Exam revision & preparationMultiple choice questionsExtended writing | Exam revision & preparationMultiple choice questionsExtended writing |  |
| **Assessment** | SummativeWritten Assessment |  | Past papers | Past papers | Past papers |  |
| **Tier 2 and 3 Words** |  |