Carnforth High School

Curriculum Map

Subject: DESIGN TECHNOLOGY

		Autumn		Spring		Summer	
		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 7	**Content, Knowledge & Skills**	**Pencil holder:** introduction to tools & processes, materials &sources, drawing, rendering & design, workshop set-up & safety, sawing, drilling, strip heating **Design for people:** ergonomics of products and workplaces, anthropometrics & data, Leonardo da Vinci, inclusive design (road crossings)	**Swivel lid box:** working drawings, marking out, tools for wood, screws, bolts & nails, timber properties & types wood stains & oil finishing, laser engraving **Design for people:** globalisation & fairtrade products, ethical business, Rana Plaza case study, smart textiles	**Gravity racer:** Gravity, potential & kinetic energy, friction, teamwork, problem solving, styling **Bamboo bicycle:** research, analysis & debate, sustainable development, new materials, communicating opinions (extension project)	**Yr 7 Food** (see curriculum map)	**Yr 7 Food** (see curriculum map)	**Yr 7 Food** (see curriculum map)
	Prior Knowledge	KS2: drawing and modelling simple structures, can include mechanisms and circuits. Little or no experience with workshop tools & machines.	First project gives basic into to workshop tools and practical	Pupils can now work with some independence with tools.			

	Assessment	pencil holder & own design ideas. Design drawings & annotation, Understanding of ergonomics & anthropometrics,	Swivel lid box practical and drawings Explanation of inclusive design Rana Plaza case study questions	Distance travelled by gravity car and quality of feedback in verbal presentation. Bamboo bicycle opinion statement			
	Key Vocabulary/ reading materials	Workshop tools & materials names, colour rendering Ergonomics, anthropometrics,	Inclusive design, sustainable forestry, deforestation.	Globlalisation, fairtrade, ethical issues, sustainable development			
	Enrichment/ Co-Curricular offer	Lunchtime workshop	Lunch time workshop	Link to forces and energy in science. Link to sustainability and developing regions in geography			
Year 8	**Content, Knowledge & Skills**	**Design skills:** freehand and drawing with templates, rendering pattern & material textures **Bird feeder:** batch production, templates & jigs, quality control & assurance, further tools & processes	**Design skills:** Harry Beck & underground map, isometric 3D drawing, biomimicry case studies. **Bird feeder:** metals & properties feeder planning flowchart	**3D drawing skills:** Sketching and designing in isometric view **Further project:** Structures team challenge	**Yr 8 Food** (see curriculum map)	**Yr 8 Food** (see curriculum map)	**Yr 8 Food** (see curriculum map)
	Prior Knowledge	Yr 7: safety in workshop & use of wood tools, basic design & drawing skills	Yr 7: oblique 3D drawing, properties of timber, drawing with templates	Properties of materials, working drawings use of grid paper from bird feeder project.			

	Assessment	Drawing equipment challenge Rendering materials in drawings	Harry Beck case study, biomimicry, isometric drawing on grid paper, annotation of materials & components, advantages of templates & jigs	Completed bird feeder practical Planning flowchart & working drawing Structures designs, making and test.			
	Key Vocabulary	Freehand, templates & jigs, QA & QC, forstner bit, dowels	Isometric drawing, biomimicry, feedback loop, orthographic drawing, galvanised	Triangulation, reinforcing, tension, compression, twisting & shear			
	Enrichment/ Co-Curricular offer	Links to rendering surface texture in art. Lunch time workshop	Links to nature and evolution in science Lunchtime workshop	Links to forces in science/maths Lunchtime workshop			
Year 9	**Content, Knowledge & Skills**	**Design & manufacturing** **'Wave' pencil holder:** Finger joint, spindle sander, sequencing making, isometric drawing, Memphis Design style, furniture & patterns, design trends (history of telephone), creative design using morphing.	**Design & manufacturing** **Car manufacturing team project:** Team work, industrial & business simulation, Henry Ford case study, use of engineering lathe, push fit & loose fit holes, quality control, profit / loss / budgeting, negotiating skills, design development.	**Car manufacturing team project:** scale of production, automation, smart manufacturing, careers in industry & design, **Architecture & urban design:** 3D perspective drawing, rendering materials, floor layout, building standards, energy efficiency, green roofs. (extension project)	**Yr 9 Food** (see curriculum map)	**Yr 9 Food** (see curriculum map)	**Yr 9 Food** (see curriculum map)
	Prior Knowledge	Yr 8: use of templates for batch production, Yr 7: colour rendering, 3D drawing	Yr 8: quality control, batch production approach.	Yr 7 & 8: 3D drawing, materials rendering			

	Assessment	Memphis design sketches Pencil holder practical	Henry Ford case study, Scales of production & smart manufacturing.	Team results in car manufacturing project. Garden studio design work.			
	Key Vocabulary	Memphis Design, morphing	Mass production, quality control & assurance	Automation, FMS, JIT, Kaisen insulation, heat pumps			
	Enrichment/ Co-Curricular offer	Links to design movements, Pop Art and morphing in Art Lunchtime workshop	Links to industrial & social development in history, Lunchtime workshop	Links to business, money management and careers in Life. Lunchtime workshop			
Year 10	**Content, Knowledge & Skills**	**Timber:** sources, conversion, hard & softwoods, manufactured boards, properties and uses **Properties of materials:** Hardness, ductility, malleability, conductivity etc **Designing for people:** ergonomics, anthropometrics, aesthetics, Dieter Rams. **People, culture & society:** needs & wants, market pull, technology push, ethical business, end of life design	**Metals:** Sources, conversion, ferrous, non-ferrous, properties, alloys, corrosion & finishes, heat treatment **Drawing styles:** freehand, isometric, orthographic, perspective views **Energy generation, storage & renewables:** Fossil fuels, renewables, nuclear, kinetic & chemical energy storage **Projects:** Forged bracket Casting	**Plastics & composites:** History & social impact, structure, thermoforming & thermosetting plastics, properties, identification, environment impact composites **Smart materials:** smart & modern materials incl. photo/thermochromic, memory alloy, polymorph, metal foams, graphene. **CAD/CAM:** 2D-design software, drawing skills, laser cutter setup **Projects:**	**Industry & enterprise:** One off, batch, mass & continuous production, automation, flexible manufacturing, JIT, lean manufacturing, Kaisen **Manufacturing processes:** Commercial manufacturing for metals, plasics & timber **Electronics:** circuits & components, micro-controllers	**Sustainability & environment:** Responsible design, life cycle assessment, CO2, climate change, pollution, carbon footprint, 6Rs **Textiles:** Natural & synthetic, properties, advanced fabrics, woven / non-woven **Paper & board:** paper types, properties & uses, modelling materials	**Forces motion & mechanisms:** Forces, types of motion, levers, gears, pulleys, linkages. **Preparation for AQA context (NEA project}** [Work experience]

		Projects: Turtle toy, Wood joints, Ergonomic handle, Router/wood lathe		Tea-light CAD/CAM project Vacuum former	**Projects:** Bird feeder/nesting box modelling	**Projects:** design challenge child's toy	
	Prior Knowledge	Yr 7 design for people Timber types Workshop tools & processes	Yr 8 bird feeder (metals) & drawing skills	Yr 7 laser cutter for box lids	Yr 8 bird feeder, Yr 9 car manufacturing 2D design from tea-light project		
	Assessment	Key facts booklet questions. Practical project outcomes, designs and evaluations Recall, retention tasks	Key facts booklet questions. Practical project outcomes, designs and evaluations Recall, retention tasks	Key facts booklet questions. Practical project outcomes, designs and evaluations Recall, retention tasks	Key facts booklet questions. Practical project outcomes, designs and evaluations Recall, retention tasks	Key facts booklet questions. Practical project outcomes, designs and evaluations Recall, retention tasks	End of year exam
	Key Vocabulary	Sustainable, deforestation, malleability, ductility, ergonomics, anthropometrics obsolescence	Ferrous, non-ferrous, alloy, corrosion, annealing, tempering	Thermoforming, thermosetting, cross links, GRP, carbon fibre, polymorph, thermochromic, photochromic	Flexible Manufacturing Systems, Just In Time, Kaisen, microprocessor, soldering	Life Cycle Assessment, 6Rs of sustainable design, pollution, synthetic	Classes of lever, linkages, drive train
	Enrichment/ Co-Curricular offer	Lunchtime workshop, projects (drama, garden), competitions	Lunchtime workshops, school projects, competitions	Lunchtime workshops, school projects, competitions	Lunchtime workshops, school projects, competitions	Lunchtime workshops, school projects competitions	Lunchtime workshops.
Year 11	**Content, Knowledge & Skills**	**Research & investigation:** Researching a context, user needs, work of others, design brief	**Design & development:** Design sketching, quick modelling, developing a	**Manufacturing:** Making skills, properties of materials, quality control, working	**Evaluation:** Review of planning & processes, testing & product	**Exam preparation:** exam paper skills, extended answer	

		NEA project - planning **Revision & review:** Designing for people	specification, testing materials & processes **NEA project – designing** **Revision & review:** Materials & properties	drawings & final designs **NEA project – making & evaluation** **Revision & review:** Manufacturing processes	evaluation, suggestions for improvements **Exam question technique** **Revision & review:** Sustainability & environment	questions, review and literacy. **Final topic review:** flash cards, quizzes etc.	
	Prior Knowledge	Prior product analysis	Yr 10 design projects KS3 projects	Prior workshop skills Yr 9 car project	Yr 10 projects		
	Assessment	NEA power point & drawings Recall, retention & exam technique tasks	Mock exam 1 Recall, retention & exam technique tasks	Mock exam 2 NEA power point & drawings & practical outcome Recall, retention & exam technique tasks	NEA submission of completed project Recall, retention & exam technique tasks	Final GCSE exam	
	Key Vocabulary	Design brief User needs & wants	Specification				
	Enrichment/ Co-Curricular offer	Lunchtime & pm workshop/intervention	Lunchtime & pm workshop/intervention	Lunchtime & pm workshop/intervention	Lunchtime intervention		

Revised: 14 Nov 2024 - GM